IEI Technology Corp.

MODEL:

UPC-12A/GM45

Panel PC with Touch Screen and Intel® Core™2 Duo or Celeron® M CPU, Gigabit Ethernet, Six USB, Audio, RS-232/422/485, SATA, RoHS Compliant, IP 65 Protection

User Manual

Rev. 1.00 – 12 May, 2009

RoHS Lead Free

Revision

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Chapter

1

Introduction

1.1 UPC-12A/GM45 Panel PC Overview

Figure 1-1: UPC-12A/GM45 Panel PC

The fanless UPC-12A/GM45 is Intel® Celeron® M powered panel PC with a rich variety of functions and peripherals. The UPC-12A/GM45 panel PC is designed for easy and simplified integration in to various applications.

An Intel® GM45 graphics memory controller hub (GMCH) coupled with an Intel® ICH9M input/output controller hub ensures optimal memory, graphics, and peripheral I/O support. The system comes with 1GB or 2GB of preinstalled DDR2 SDRAM and supports a maximum of 4.0 GB of DDR2 SDRAM ensuring smooth data throughputs with reduced bottlenecks and fast system access.

Four serial ports and six external USB 2.0 ports ensure simplified connectivity to a variety of external peripheral devices. A VGA connector enables connectivity to other monitors. Wi-Fi capabilities and two RJ-45 GbE connectors ensure smooth connection of the system to an external LAN.

1.1.1 Model Variations

The model variations of UPC-12A/GM45 series are listed in **Table 1-1**.

UPC-12A/GM45	CPU	Brightness	Memory	Wireless
-CM575/WT-R/1GB-R10	2GHz Intel® Celeron® M 575	450cd/m^2	1GB DDR2	Yes
-T7500/WT-R/2GB-R10	2.2GHz Intel® Core™2 Duo T7500	450cd/m^2	2GB DDR2	Yes
-T9400/WT-R/2GB-R10	2.53GHz Intel® Core™2 Duo T9400	450cd/m^2	2GB DDR2	Yes
AFL-12AH/GM45		**Brightness**	**Memory**	**Wireless**
-CM575/WT-R/1GB-R10	2GHz Intel® Celeron® M 575	1000cd/m^2	1GB DDR2	Yes
-T7500/WT-R/2GB-R10	2.2GHz Intel® Core™2 Duo T7500	1000cd/m^2	2GB DDR2	Yes
-T9400/WT-R/2GB-R10	2.53GHz Intel® Core™2 Duo T9400	1000cd/m^2	2GB DDR2	Yes

Table 1-1: Model Variations

1.1.2 Features

All the UPC-12A/GM45 models feature the following:

- Intel® Core™2 Duo or Intel® Celeron® M processor
- Intel® GM45 chipset
- DDR2 SDRAM preinstalled
- Three standard RS-232 connectors and one RS-232/422/485 connector
- Six standard USB 2.0 ports
- Watchdog timer that triggers a system reset if the system hangs for some reasons
- Remotely monitor system power status through smart battery utility
- Built-in two stereo speakers
- IP 65 compliant front panel
- AT or ATX power mode
- Battery backup power support
- Second displays support

- Touch screen
- RoHS comlpliance
- 802.11 b/g/n PCIe wireless module with PIFA antennas (optional)

1.2 External Overview

The flat panel PC is a rectangular cubic structure that comprises of a screen, rear panel, top panel, bottom panel and two side panels (left and right). An aluminum frame surrounds the front screen. The rear panel provides screw holes for a wall-mounting bracket, and an arm mounting interface. A 2.5” SATA HDD bay and a backup battery can also be accessed through the rear panel. The bottom panel provides access to external interface connectors that include LAN, USB 2.0, VGA, audio jack, serial port connectors and PCI expansion card slot.

1.2.1 Front Panel

The front side of the UPC-12A/GM45 is a flat panel TFT LCD screen surrounded by an aluminum frame. The bottom of the front panel features two USB ports protected by the waterproof cover. The front panel also has following LED indicators and sensor:

- Power adapter LED
- HDD status LED
- Battery charging LED
- Battery discharging LED
- Ambient light sensor

Figure 1-2: Front View

Power Adapter LED	On: The power adapter is connected to the system
HDD LED	On: HDD Status
Battery Charging LED	On The battery is connected and fully charged Blinking: Charging the battery
Battery Discharging LED	On: The system is on and using battery power
	Blinking: Battery low (10%)

Table 1-2: LCD Front LED Indicators

1.2.2 Bottom Panel

The following is a list of the bottom panel peripheral device connectors on the UPC-12A/GM45.

- 2 x Audio jacks
- 3 x RS-232 serial port (COM1, COM2 and COM3) connectors
- 1 x RS-232/422/485 serial port (COM4) connector
- 1 x VGA connector

- 4 x USB 2.0 connectors
- 2 x RJ-45 GbE connectors
- 1 x Remote monitor RJ-45 connector
- 1 x Remote COM port by RJ-45 connector
- 1 x Compact Flash slot
- 1 x PCI expansion card slot
- 1 x 12 V DC power input connector
- 1 x 9 V ~ 28 V DC power input terminal block
- 1 x External power switch connector

The bottom panel also includes the following switches and buttons:

- 1 x Power switch
- 1 x UPS/Battery mode switch
- 1 x AT/ATX power mode switch
- 1 x Clear CMOS button
- 1 x Reset button

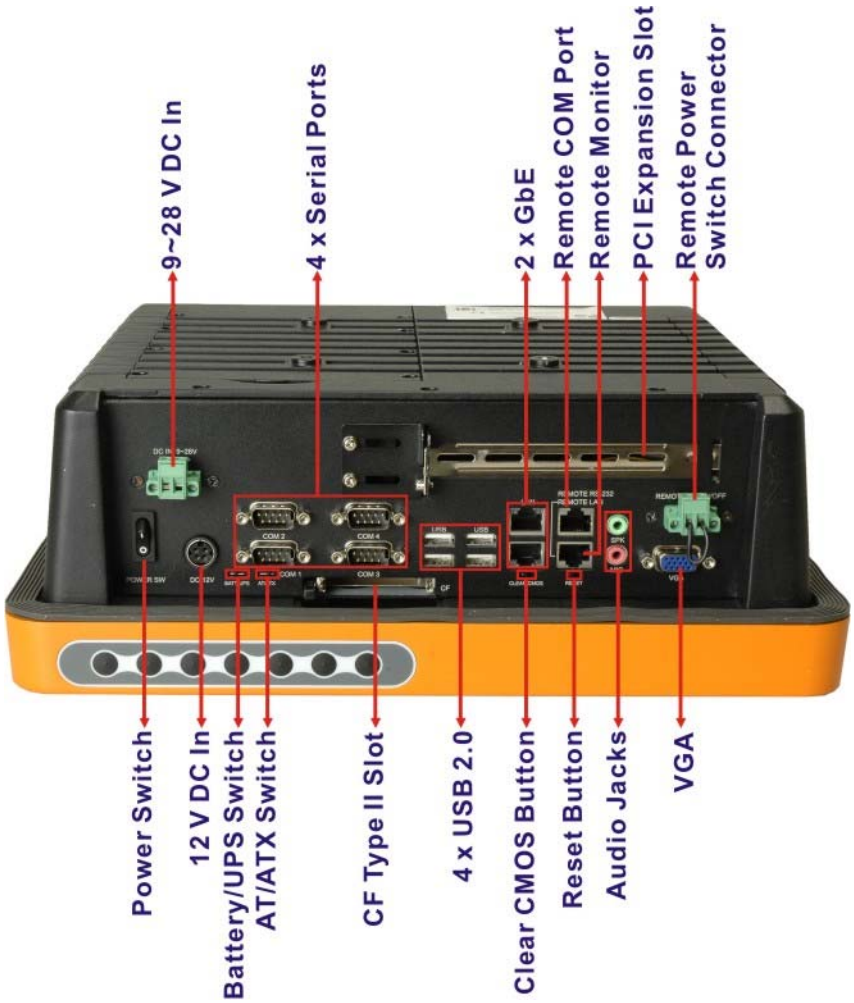


Figure 1-3: UPC-12A/GM45 Bottom View

1.2.3 Side Panels

The both sides panel of the flat panel PC contain some vents for system ventilation. The system fans and amplifiers are installed inside the side panels and can be accessed for maintenance by removing the side panels (**Figure 1-4**).

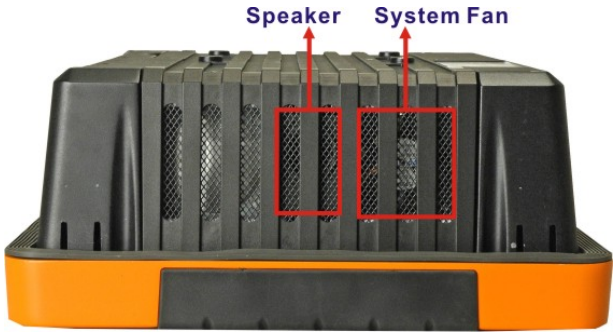


Figure 1-4: UPC-12A/GM45 Side View

1.2.4 Rear Panel

The rear panel has retention screw holes that support a wall-mounting bracket. The rear panel also provides access to the 2.5” HDD bay and the backup battery slot.

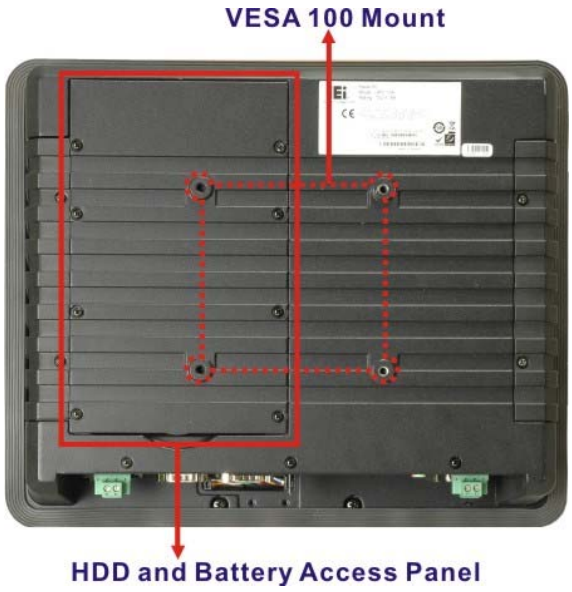


Figure 1-5: UPC-12A/GM45 Rear View

1.2.5 Frame

An aluminum frame surrounds the TFT LCD screen. The aluminum frame of the UPC-12A/GM45 contains several retention screws that secure the rear cover of the panel PC.

1.3 Specifications

1.3.1 Preinstalled Hardware Components

The UPC-12A/GM45 panel PC has the following preinstalled components:

- 1 x Motherboard
- 1 x TFT LCD screen
- 1 x Touch screen
- 1 x Inverter
- 1 x Wireless LAN module
- 1 x DDR2 memory module
- 2 x System fans
- 2 x Stereo speakers

The following section lists the system specifications. The technical specifications for some other preinstalled components are shown in the **Appendix A**.

1.3.2 System Specifications

The technical specifications for the UPC-12A/GM45 system are listed in **Table 1-3.**

Specification	UPC-12A/GM45	UPC-12AH/GM45
LCD Size	12.1”	12.1”
Max. Resolution	1024 x 768 (XGA)	1024 x 768 (XGA)
Brightness	450 cd/m^2	1000 cd/m^2
Contrast Ratio	700:1	500:1
LCD Color	262K	16.7M

Pixel Pitch (mm)		0.240 (H) x 0.240 (V)	0.240 (H) x 0.240 (V)
Viewing Angle (H-V)		150 (H) / 150 (V)	120 (H) / 120 (V)
Backlight MTBF		50,000 hours	50,000 hours
SBC Model		UPCMB-GM45	
CPU		2.20 GHz Intel® Core™2 Duo T7500 processor, 2.53 GHz Intel® Core™2 Duo T9400 processor or 2.00 GHz Intel® Celeron® M 575 processor	
Chipsets		Intel® GM45 + ICH9M	
Memory		One 1.0 GB DDR2 SDRAM SO-DIMM pre-installed (Two 200-pin SO-DIMM sockets support up to 4.0 GB 400/533 MHz DDR2 memory)	
SSD		CF Type II	
Watchdog Timer		Software Programmable supports 1 sec. ~ 255 sec. system reset	
Battery Capacity		14.8 V, 3800 mAH	
UPS Run-time	**T7500 CPU**	40 minutes	40 minutes
	T9400 CPU	40 minutes	30 minutes
	575 CPU	50 minutes	40 minutes
Audio		2 x Audio amplifiers 1 x Speaker out connector 1 x Mic in connector	
Expansion		1 x PCI 1 x PCIe Mini interface (wireless LAN 802.11 b/g/n module) 1 x PCIe x1 (optional)	

HDD Drive Bay		1 x 2.5” SATA HDD bay	
Construction Material		Aluminum die-casting chassis	
Front Panel Color		Orange and black	
Operation Temperature		0ºC ~ 45ºC	
Storage Temperature		-20ºC ~ 70ºC	
Dimensions (W x H x D) (mm)		335.0 x 280.0 x 119.0	
Weight (Net/Gross)		5.8kg/6.9 kg	
IP level (front panel)		IP 65	
EMC		CE, CCC and FCC	
Safety		CB	
Touch Screen		Resistive Type 5-wire (touch controller IC is on board)	
Power Adapter		150 W	
		Input: 90 VAC ~ 264 VAC @ 50 Hz / 60 Hz	
		Output: 12 VDC at 12.5 A	
Power Consumption	**T7500 CPU**	63 W	73 W
	T9400 CPU	65 W	74 W
	575 CPU	60 W	70 W
I/O Ports and Switches		1 x 12 V DC In connector	
		1 x 9~28 V DC In terminal block	
		1 x AT/ATX power mode switch	
		1 x Battery/UPS mode switch	
		1 x Power switch	
		3 x RS-232 ports	
		1 x RS-232/422/485 port (COM4)	

	6 x USB 2.0 connectors (four on the bottom and two on the front)
	2 x GbE connectors
	1 x Remote monitor RJ-45 connector
	1 x Remote COM port by RJ-45 connector
	2 x Audio jacks
	1 x VGA connector
	1 x Remote power switch connector

Table 1-3: UPC-12A/GM45 System Specifications

Chapter

2

Detailed Specifications

2.1 Dimensions

The dimensions of the UPC-12A/GM45 are shown in **Figure 2-1** and listed below.

- **Width**: 335.0 mm
- **Height**: 280.0 mm
- **Depth**: 118.5 mm

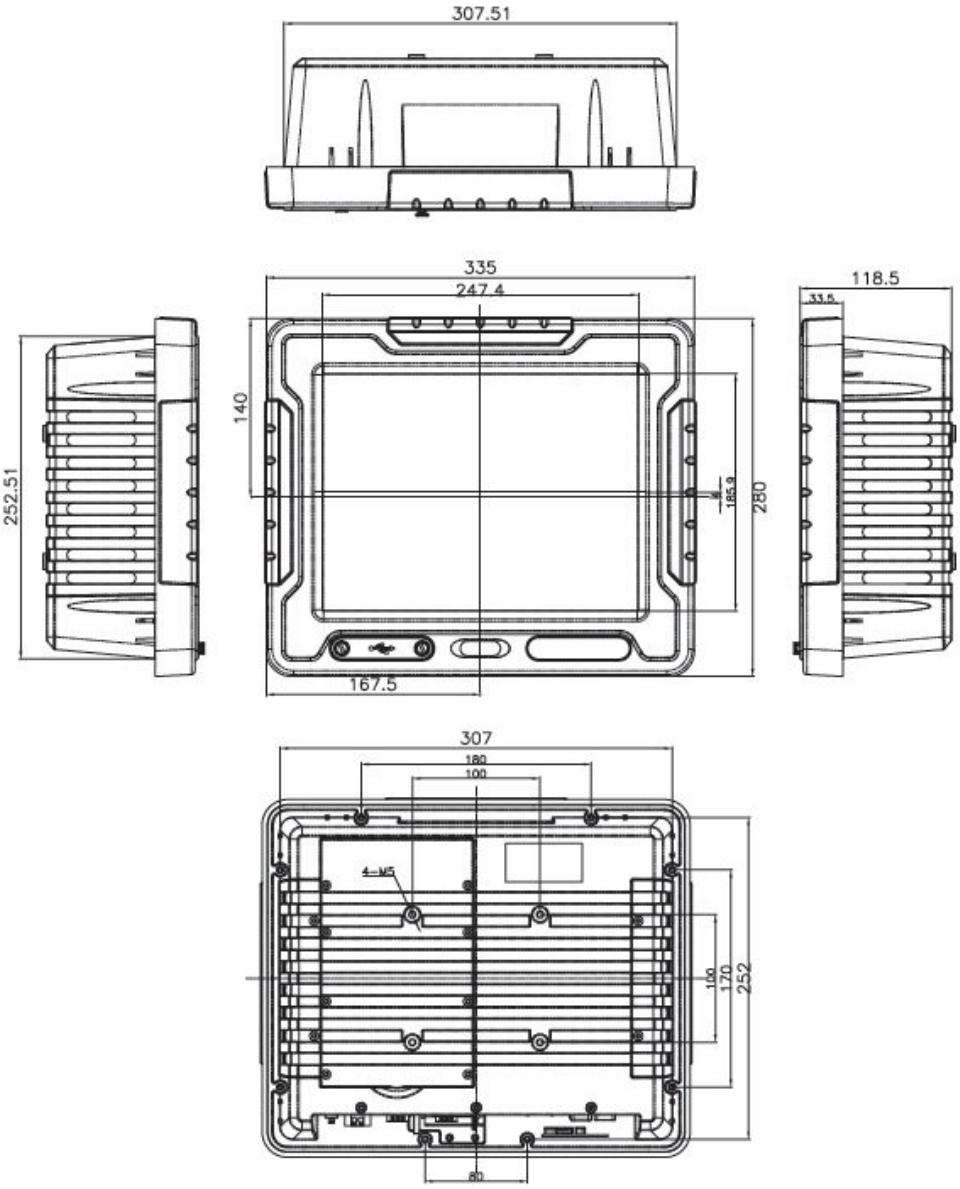


Figure 2-1: UPC-12A/GM45 Dimensions (mm)

2.2 Intel® Processor Support

An Intel® processor is installed in the system. Please refer to **Table 1-1** for model and CPU variations. The processor specifications are listed below.

Processor Number	575	T7500	T9400
CPU Speed	2 GHz	2.20 GHz	2.53 GHz
Bus Speed	667 MHz	800 MHz	1066 MHz
Bus/Core Ratio	12.0	11	9.4
L2 Cache Size	1 MB	4 MB	6 MB
L2 Cache Speed	2 GHz	2.2 GHz	2.53 GHz
Technology	65 nm	65 nm	45 nm

Table 2-1: UPC-12A/GM45 Series CPU Specifications

The processor is protected by the dust-proof heat sink shown in **Figure 2-2** below.

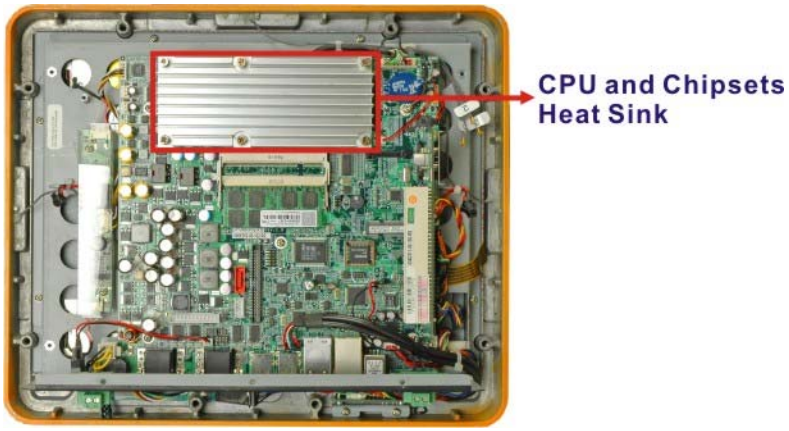


Figure 2-2: CPU and Chipsets Heat Sink

2.3 Motherboard Components

The following sections describe some of the features on the motherboard.

2.3.1 Memory Support

2.3.1.1 Installed Memory

One 200-pin 1GB or 2GB DDR2 SDRAM SO-DIMM is installed in the UPC-12A/GM45 and controlled by the Intel® GM45 GMCH installed on the internal motherboard.

2.3.1.2 Additional Memory

The Intel® GM45 is capable of supporting two 200-pin 2.0 GB (max.) 667 MHz or 800 MHz DDR2 SDRAM SO-DIMM (system max. 4.0 GB). If additional memory is required, please contact an IEI sales representative and discuss the necessary system requirement.

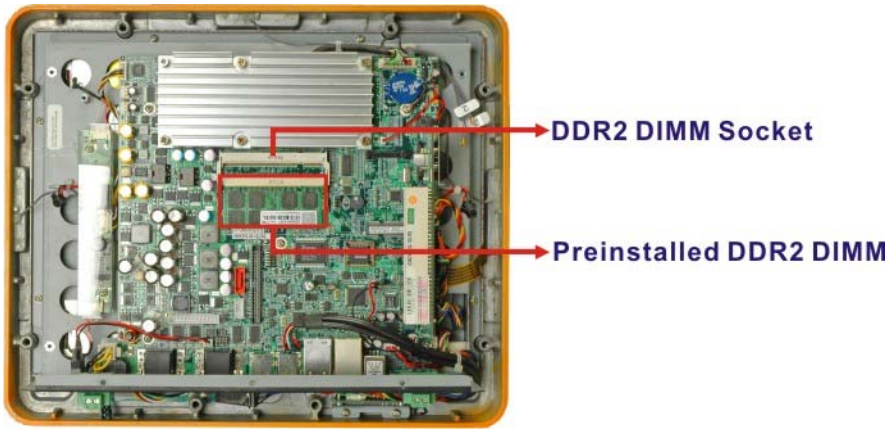


Figure 2-3: Memory Module and Memory Socket

2.3.2 Storage Capacity

The UPC-12A/GM45 comes with one hard disk drive bay for a 2.5” SATA HDD (**Figure 2-4**). The hard disk drive bay can be accessed by removing the HDD access panel from the bottom panel.

Figure 2-4: SATA Hard Disk Drive Bay

The system can also support a CompactFlash® Type II (CF Type II) memory disk (**Figure 2-5**).

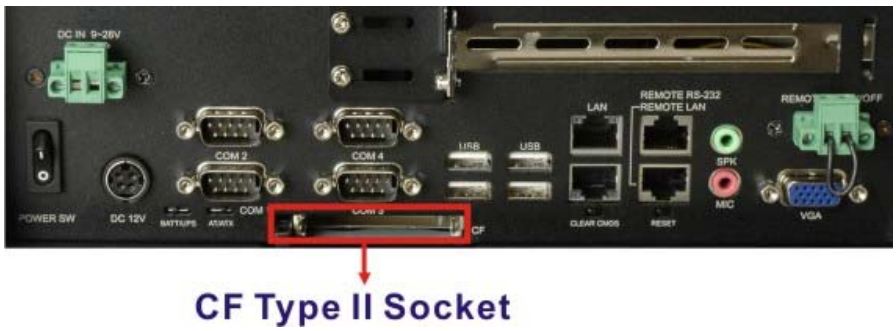


Figure 2-5: CompactFlash® Slot

2.4 External Peripheral Interface Connectors

The following section describes the external peripheral interface connectors on the real panel and the bottom panel of the panel PC.

2.4.1 Serial Port Connectors

The UPC-12A/GM45 has four serial ports (COM1, COM2, COM3 and COM4) on the bottom panel. Three of these ports (COM1, COM2 and COM3) are RS-232 only ports. The COM4 serial port can be configured as a RS-232, RS-422 or an RS-485 serial port.

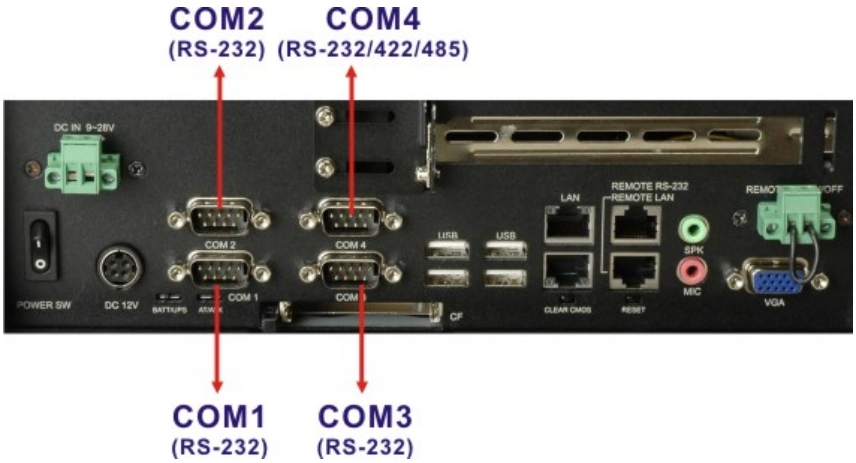


Figure 2-6: COM Ports

Two of the serial ports (COM1 and COM2) are interfaced to the ITE IT8718 super I/O, through the low pin count (LPC) bus to the ICH9M Southbridge. The remaining two serial ports (COM3 and COM4) are connected to the ICH9M LPC bus through a Fintek serial port controller.

2.4.2 LAN Connectivity

Two of the PCI Express (PCIe x1) lanes from the ICH9M Southbridge are interfaced to two Realtek RTL8111CP PCIe gigabit Ethernet (GbE) controllers. The RTL8111CP controllers are then connected directly to two RJ-45 connectors on the bottom panel and provides external PCIe GbE connectivity.

Figure 2-7: RJ-45 Ethernet Connector

2.4.3 External USB Connectors

The UPC-12A/GM45 has six USB 2.0 connectors, two on the front panel and four on the bottom panel. All of the USB 2.0 connectors are interfaced directly to the USB controllers on the ICH9M Southbridge. The USB connectors are fully compliant with USB specification Revision 2.0 and USB specification Revision 1.1 and can be interfaced to both USB 1.1 and USB 2.0 compliant devices.

Figure 2-8: External Standard USB Ports

2.5 UPC-12A/GM45 Front Side

2.5.1 Monitor

A 12.1” LCD screen is installed in the monitor of the UPC-12A/GM45 panel PC.

2.5.2 Touch-Screen Module

A controller for the 5-wire resistive touch screen is connected to the motherboard through the RS-232 interface. The sensitive touch screen is accurate, reliable and durable.

2.5.3 OSD Buttons

There are several on-screen-display (OSD) control buttons oriented horizontally along the right hand side of the monitor front panel. The image below shows an arrangement of OSD controls.

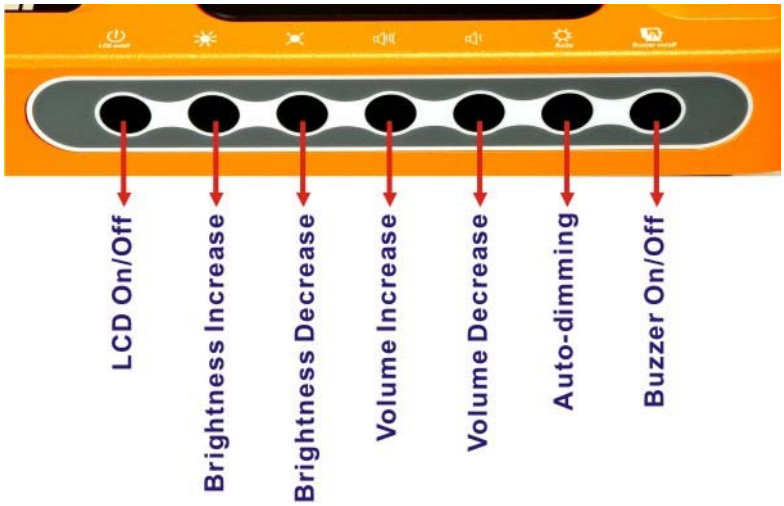


Figure 2-9: OSD Buttons

- **LCD ON/OFF Button**

  Press this button to turn the LCD monitor on or off.
- **Brightness Increase Button**

  Press this button to increase the LCD brightness.
- **Brightness Decrease Button**

  Press this button to decrease the LCD brightness.
- **Volume Increase Button**

  Press this button to increase the audio volume.
- **Volume Decrease Button**

  Press this button to decrease the audio volume.
- **Auto Dimming Button**

  Press this button to enable or disable auto-dimming function.
- **Buzzer On/Off Button**

  Press this button to enable or disable buzzer.

2.6 Graphics

2.6.1 Intel® GM45 Integrated Graphics Engine

The Intel® GM45 has the Intel® Gen 5.0 graphics engine integrated into the chipset and interfaced to the VGA connector on the bottom panel. The Intel® Gen 5.0 has a 533-MHz core render clock at 1.05-V core voltage.

Figure 2-10: VGA Connector

2.6.2 Dual-Display

The system supports dual display capabilities. The second display device can be connected to the UPC-12A/GM45 through the VGA connector described above.

2.7 Audio

The integrated audio controller on the Intel® ICH9M Southbridge is integrated to a RealTek ALC888 High Definition Audio codec. The RealTek ALC888 is a 7.1+2 channel audio codec providing 10 DAC channels. The audio connectors are shown in **Figure 2-11**.

Figure 2-11: Audio Connectors

2.7.1 Stereo Speakers

Two internal stereo speakers are installed inside the sides of the UPC-12A/GM45.

2.8 System Power

2.8.1 Power Mode

The panel PC can be run in the AT power mode or the ATX power mode. Both these power modes are described below.

2.8.1.1 AT Power Mode

With the AT mode selected, the power is controlled by a central power unit rather than a power switch. The UPC-12A/GM45 panel PC turns on automatically when the power is connected. The AT mode benefits a big retail store to control multiple panel PCs from a central management center.

2.8.1.2 ATX Power Mode

With the ATX mode selected, the UPC-12A/GM45 panel PC goes in a standby mode when it is turned off. The panel PC can be easily turned on via network or a power switch in standby mode. Remote power control is perfect for the applications that the panel PC needs to be set individually and controlled remotely.

2.8.2 Power Adapter

The system is shipped with a 90 V to 264 V AC power adapter that has a maximum power output of 150 W. The power adapter has 12 V DC output at 12.5 A.

2.8.3 Power Connectors

The power connectors are located on the bottom panel interface panel. The 12 V DC input connector is a standard 4-pin power connector. The 9~28 V DC input is by 2-pin terminal block. The power connectors are shown in **Figure 2-12** below.

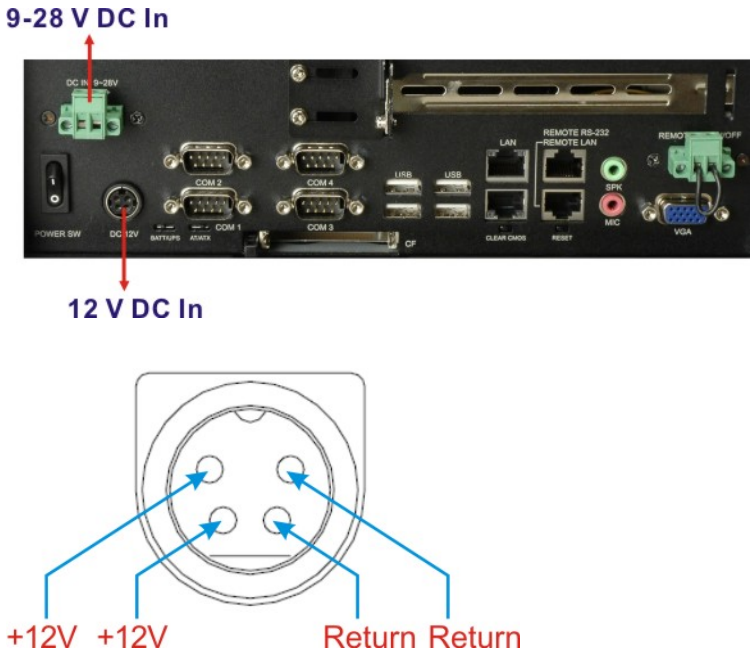


Figure 2-12: Power Connectors

2.8.4 Lithium Battery

A 14.8 V, 3800mAh Lithium Battery Pack can be installed in the UPC-12A/GM45 series to provide backup power for the system. Before start using the battery function, please install and connect the battery to the system (refer to **Section 4.7**). Once the battery is connected to the system, the battery starts discharging even when the system power is off. Users can use the AUPS to monitor the battery status (refer to **Chapter 7**). To charge the battery, connect the power adapter to the system.

Figure 2-13: Lithium Battery Pack

2.8.5 Power Mode

The system can be run in the AT power mode or the ATX power mode. The power mode switch is shown in **Figure 2-14**.

Figure 2-14: AT/ATX Mode Switch

The UPC-12A/GM45 is also has an UPS/Battery mode switch shown in **Figure 2-15**.

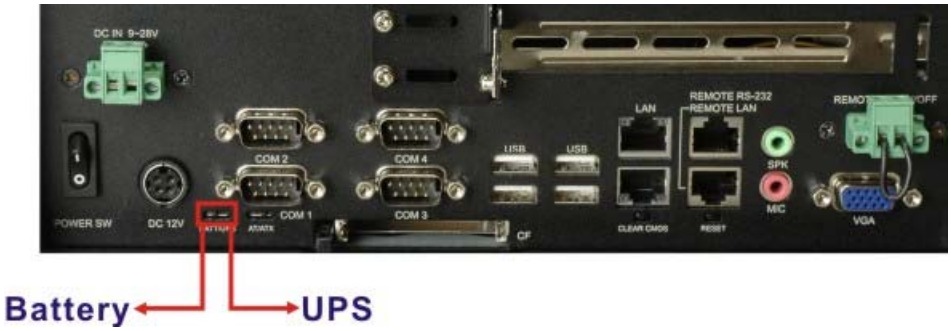


Figure 2-15: UPS/Battery Mode Switch

2.8.6 Power On/Off

AT Mode		UPS Mode*	Battery Mode*
System Booting	Battery Only	NOT able to boot up the system.	NOT able to boot up the system.
	External DC Only	Turn on automatically when the power is connected.	Turn on automatically when the power is connected.
	Battery + External DC	Turn on automatically when the power is connected.	Turn on automatically when the power is connected.
System Shut Down	Battery Only	N/A	N/A
	External DC Only	Turn off automatically when the power is disconnected.**	Turn off automatically when the power is disconnected.**
	Battery + External DC	Turn off automatically when the power is disconnected.**	Turn off automatically when the power is disconnected.**
DC Power Fail	Battery Only	N/A	N/A
	External DC Only	Turn off automatically when the power is disconnected.	Turn off automatically when the power is disconnected.
	Battery + External DC	Remain power on until the battery is dead***	Remain power on until the battery is dead***

* Under AT power mode, the battery mode has the same function as UPS mode.

** The power switch does not work under AT power mode.

*** The UPS terminal switch must be connected with the external power main switch to enable the battery function. If the UPS terminal switch is not connected, the battery won't work.

Table 2-2: AT Power Mode

ATX Mode		UPS Mode	Battery Mode
System Booting	Battery Only	NOT able to turn on by the power button.*	Turn on by the power button.*
	External DC Only	Able to turn on by the power button.	Able to turn on by the power button.
	Battery + External DC	Able to turn on by the power button.	Able to turn on by the power button.
System Shut Down	Battery Only	Turn off the system by soft shutdown, power button or battery dead	Turn off the system by soft shutdown, power button or battery dead
	External DC Only	Turn off the system by soft shutdown or power button	Turn off the system by soft shutdown or power button
	Battery + External DC	Turn off the system by soft shutdown or power button	Turn off the system by soft shutdown or power button
DC Power Fail	Battery Only	Remain power on until the battery is dead**	Remain power on until the battery is dead**
	External DC Only	Turn off automatically when the power is disconnected.	Turn off automatically when the power is disconnected.
	Battery + External DC	Remain power on until the battery is dead**	Remain power on until the battery is dead**

* Under the UPS mode, the system can not be turned on when only with battery connected.

** The UPS terminal switch does not work under ATX power mode (no matter the battery is connected or not).

Table 2-3: ATX Power Mode

2.8.7 Buzzer Alarm

The buzzer alarm function details are listed below.

	Sound Mode	Description
Adapter Disconnected	Three long beeps	Alarm when the power adapter is disconnected from the system
Battery Low	Continued two short beeps	Alarm when the battery is low (10%) or the battery temperature is higher than 60℃.
Battery Fail	Continued beeps	Alarm when battery fails

Table 2-4: Buzzer Alarm

2.9 Wireless Ethernet

An 802.11 b/g/n wireless LAN module and PIFA antenna on the UPC-12A/GM45 ensures an uninterrupted wireless connection. PIFA antennas can receive high-quality, uniform signals in any location from all directions without any signal degradation or impedance and are the most efficient antennas on the market.

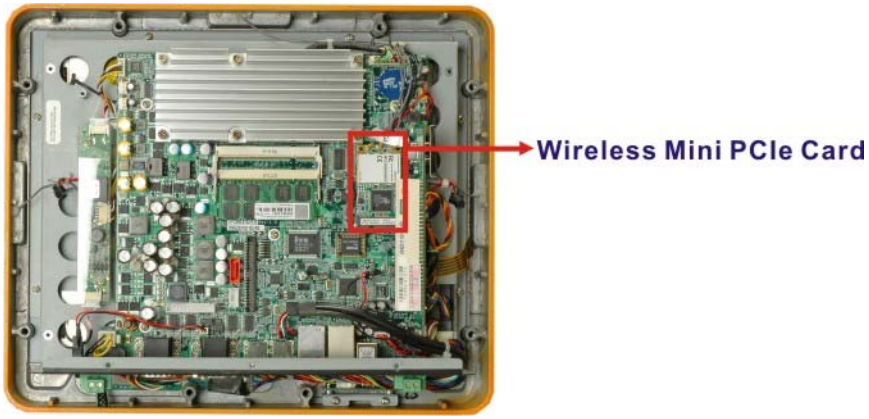


Figure 2-16: Wireless LAN Mini PCI Card

Chapter

3

Unpacking

3.1 Unpacking

To unpack the flat panel PC, follow the steps below:

WARNING!

The front side LCD screen has a protective plastic cover stuck to the screen. Only remove the plastic cover after the panel PC has been properly installed. This ensures the screen is protected during the installation process.

Step 1: Use box cutters, a knife or a sharp pair of scissors that seals the top side of the external (second) box.

Step 2: Open the external (second) box.

Step 3: Use box cutters, a knife or a sharp pair of scissors that seals the top side of the internal (first) box.

Step 4: Lift the monitor out of the boxes.

Step 5: Remove both polystyrene ends, one from each side.

Step 6: Pull the plastic cover off the panel PC.

Step 7: Make sure all the components listed in the packing list are present.

3.1.1 Packing List

The UPC-12A/GM45 panel PC is shipped with the following components:

Quantity	Item	Image
1	UPC-12A/GM45 panel PC	
1	Screw set	
1	Power adapter (150 W, 12V@12.5A) (**P/N**: 63000-FSP150AHAN1808-RS)	
1	Power cord	
1	RJ-45 to DB-9 COM port cable (**P/N**: 32000-089201-RS)	
1	802.11 b/g/n PCIe mini wireless card (**P/N**: 7F900-Q802XKN-RS)	
1	Smart battery pack (**P/N**: BAT-LI-4S2P3800A)	

6	Panel mount clamps	
1	Touch pen	
1	User manual CD and driver CD	

If any of these items are missing or damaged, contact the distributor or sales representative immediately.

Chapter

4

Installation

4.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the maintenance of the EP series may result in permanent damage to the EP series and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the UPC-12A/GM45. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the UPC-12A/GM45 is accessed internally, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding***: - Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: - When configuring the UPC-12A/GM45, place it on an antic-static pad. This reduces the possibility of ESD damaging the UPC-12A/GM45.
- ***Only handle the edges of the PCB***: - When handling the PCB, hold the PCB by the edges.

4.2 Installation Precautions

When installing the panel PC, please follow the precautions listed below:

- **Power turned off**: When installing the panel PC, make sure the power is off. Failing to turn off the power may cause severe injury to the body and/or damage to the system.
- **Certified Engineers**: Only certified engineers should install and modify onboard functionalities.

- **Anti-static Discharge**: If a user open the rear panel of the panel PC, to configure the jumpers or plug in added peripheral devices, ground themselves first and wear and anti-static wristband.

4.3 Preinstalled Components

The following components are all preinstalled.

- Motherboard
- TFT LCD screen
- DDR2 memory module
- Resistive type touch screen
- Stereo speakers

Preinstalled OEM customizations may include the following.

- Different DDR2 memory module
- Hard disk drive
- CF card

Component installation is described in **the following sections.**

4.4 Installation and Configuration Steps

The following installation steps must be followed.

Step 1: Unpack the panel PC

Step 2: Install the HDD

Step 3: Install the battery

Step 4: Install the PCIe mini wireless card

Step 5: Install the PCI expansion card

Step 6: Configure the system

Step 7: Mount the system

Step 8: Connect peripheral devices to the I/O interface panel of the panel PC.

4.5 CF Card Installation

The UPC-12A/GM45 has one CF Type II slot. To install the CF card, follow the instructions below.

Step 1: **Locate the CF card socket**. The CF card socket is located on the bottom panel of the UPC-12A/GM45.

Step 2: **Install the CF Card**. Correctly align the CF card with the socket and insert the CF card into the socket. See **Figure 4-1**.

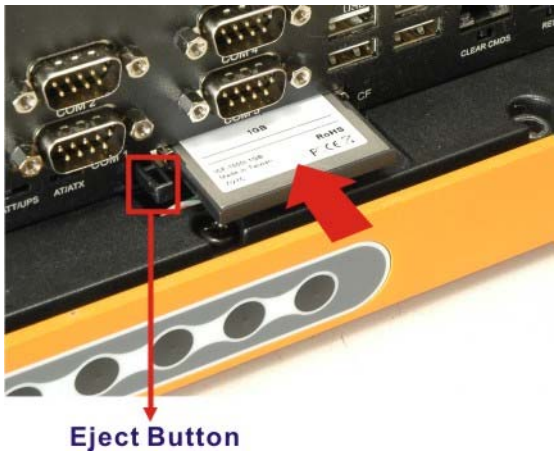


Figure 4-1: CF Card Installation

Step 3: To remove the CF card, push the eject button on the side of the CF card socket.

4.6 HDD Installation

The UPC-12A/GM45 has one HDD slot inside the bottom panel for one 2.5” SATA HDD. To install the HDD, follow the instructions below.

Step 1: **Remove the HDD/battery access panel**. The HDD/battery access panel is secured to the rear panel with eight retention screws. Remove the retention screws to remove the HDD/battery access panel.

Figure 4-2: HDD/Battery Access Panel Retention Screws

Step 2: **Locate the HDD slot** in the UPC-12A/GM45.

Step 3: **Remove the HDD bracket.** The HDD bracket is secured to the aluminum chassis by four retention screws (**Figure 4-3**). To remove the HDD bracket, please remove the four retention screws.

Figure 4-3: HDD Bracket Retention Screws

Step 4: **Place one 2.5” SATA HDD onto the HDD bracket** as shown in **Figure 4-4**.

Connect the HDD to the SATA cable connector.

Step 5: **Secure the HDD**. Align the four retention screw holes on the both side of the HDD with the retention screw holes of the HDD bracket. Insert four retention screws into the both sides of the HDD bracket to secure the HDD to the HDD bracket. See **Figure 4-4**.

Figure 4-4: Secure the HDD with the HDD Bracket

Step 6: **Install the HDD.** Correctly align the four retention screw holes on the HDD bracket with the retention screw holes on the aluminum chassis. Insert four previously removed retention screws to secure the HDD bracket to the chassis. See **Figure 4-5**.

Figure 4-5: HDD Installation

Step 7: **Reinstall the bottom panels**. Make sure the bottom panels are properly secured with the previously removed retention screws.

4.7 Battery Installation

The UPC-12A/GM45 is come with a battery for system backup power. To install the battery, follow the steps below.

Step 1: **Remove the HDD/battery access panel**. The HDD/battery access panel is secured to the rear panel with eight retention screws. Remove the retention screws to remove the HDD/battery access panel.

Figure 4-6: HDD/Battery Access Panel Retention Screws

Step 2: Connect the battery to the battery connector.

Step 3: Secure the battery to the chassis with two retention screws.

Figure 4-7: Battery Installation

Step 4: Replace the HDD/battery access panel.

4.8 PCIe mini Wireless Module Installation

The UPC-12A/GM45 is come with a PCIe mini Wireless card to provide wireless connectivity. To install the wireless module, follow the steps below.

Step 1: Remove the rear cover. The rear cover is secured to the system with 11 retention screws. To remove the rear cover, remove the retention screws.

Figure 4-8: Rear Cover Retention Screws

Step 2: Disconnect the system cables and lift the rear cover off the UPC-12A/GM45. The system cables that need to be disconnected include:

- SATA cable
- SATA power cable
- Battery connector (PCN1) cable
- Two system fan cables (FAN2 and FAN3)
- Two speaker cables

Step 3: Locate the PCIe mini socket.

Step 4: Install the PCIe mini wireless card into the PCIe mini socket.

Step 5: Connect the three antenna cables from the system to the wireless card.

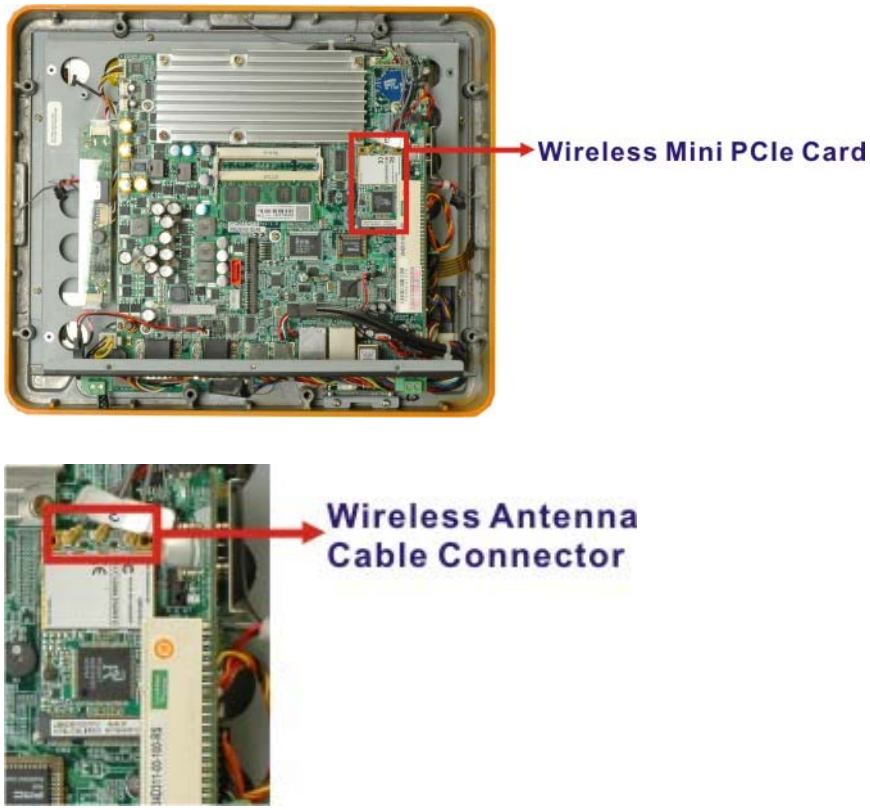


Figure 4-9: Wireless Module Installation

4.9 PCI Expansion Card Installation

The UPC-12A/GM45 has one slot on the bottom panel for PCI card expansion. To install the PCI card, follow the instructions below.

Step 1: Remove the rear cover. Refer to **Section 4.8 Step 1~2**.

Step 2: Remove the PCI slot cover by removing the PCI slot cover retention screw.

Figure 4-10: PCI Card Slot Cover Retention Screws

Step 3: Insert a PCI card into the PCI slot (**Figure 4-10**).

Step 4: Secure the PCI card with the retention screw (**Figure 4-10**).

Step 5: Replace the plastic back cover.

4.10 Jumper Settings

NOTE:

A jumper is a metal bridge used to close an electrical circuit. It consists of two or three metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.

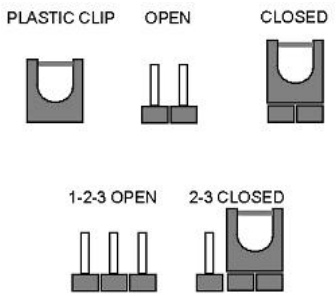


Figure 4-11: Jumper Locations

The following jumpers can be found on the motherboard installed in the UPC-12A/GM45. Before the UPC-12A/GM45 is installed, the jumpers must be set in accordance with the desired configuration. The jumpers on the UPC-12A/GM45 motherboard are listed in **Table 4-1**.

Description	Label	Type
CF card setup	JP8	2-pin header
CF voltage select	JP7	3-pin header
COM4 function select	JP4	14-pin header
COM4 function select	JP5	12-pin header

Table 4-1: Jumpers

4.10.1 Access the Jumpers

To access the jumpers, please remove the rear cover. Please refer to **Section 4.8 Step 1~2** for rear cover removal instruction.

4.10.2 Preconfigured Jumpers

WARNING:

Do not change the settings on the jumpers in described here. Doing so may disable or damage the system.

The following jumpers are preconfigured for the UPC-12A/GM45. Users should **NOT** change these jumpers.

Jumper Name	Label	Type
LVDS voltage selection	JP3	6-pin header
Panel Type and Resolution	JP1	8-pin header

Table 4-2: Preconfigured Jumpers

4.10.3 CF Voltage Select

Jumper Label:	**JP7**
Jumper Type:	3-pin header
Jumper Settings:	See **Table 4-3**
Jumper Location:	See **Figure 4-12**

The CF Voltage Select jumper sets the CF Type II slot can be set as either +5 V or +3.3 V. CF Voltage Select jumper settings are shown in **Table 4-3**.

CF Voltage Select	Description	
Short 1-2	+3.3 V	Default
Short 2-3	+5 V	

Table 4-3: CF Voltage Select Jumper Settings

The CF Voltage Select jumper location is shown in **Figure 4-12**.

Figure 4-12: CF Voltage Select Jumper Location

4.10.4 CF Card Setup

Jumper Label: **JP8**

Jumper Type: 2-pin header

Jumper Settings: See **Table 4-4**

Jumper Location: See **Figure 4-13**

CF Card Setup	Description	
Short	Master	
Open	Slave	Default

Table 4-4: CF Card Setup Jumper Settings

The CF Card Setup jumper location is shown in **Figure 4-13**.

Figure 4-13: CF Card Setup Jumper Location

4.10.5 COM4 Function Select Jumper

Jumper Label: **JP4** and **JP5**

Jumper Type: Pin-header

Jumper Settings: See **Table 4-5** and **Table 4-6**

Jumper Location: See **Figure 4-14**

The COM 4 Function Select jumpers (JP4 and JP5) set the communication protocol used by the COM4 serial communications port as RS-232, RS-422 or RS-485. The COM 4 Function Select settings are shown in **Table 4-5**.

JP4	Description	
Short 7-8, 9-10	RS-232	
Short 1-3, 2-4, 11-12	RS-422	Default
Short 3-5, 4-6, 13-14	RS-485	

Table 4-5: COM4 Function Select Jumper Settings (JP4)

JP5	Description	
Short 1-2, 4-5, 7-8, 10-11	RS-232	
Short 2-3, 5-6, 8-9, 11-12	RS-422 or RS-485	Default

Table 4-6: COM4 Function Select Jumper Settings (JP5)

The COM4 Function Select jumper locations are shown in **Figure 4-14** below.

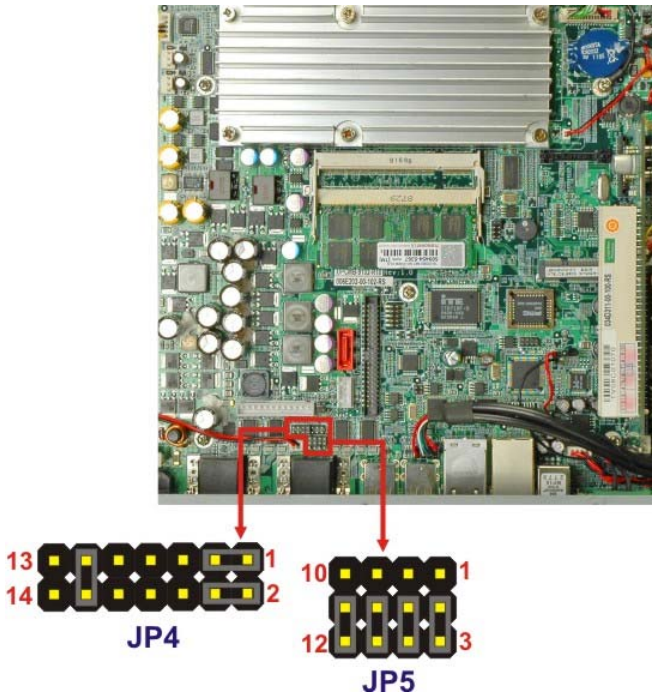


Figure 4-14: COM4 Function Select Jumper Locations

4.10.5.1 COM4 RS-422 and RS-485 Pinouts

The pinouts for RS-422 and RS-485 operation of external serial port COM 4 are detailed below.

COM 4	RS-422 Description
Pin 1	TX-
Pin 2	TX+
Pin 6	RX-
Pin 7	RX+

Table 4-7: RS-422 Pinouts

COM 4	RS-485 Description
Pin 1	Data-
Pin 2	Data+

Table 4-8: RS-485 Pinouts

4.10.6 Clear CMOS Button

Jumper Type: Push button

Jumper Location: See **Figure 4-15**

If the UPC-12A/GM45 fails to boot due to improper BIOS settings, the clear CMOS button clears the CMOS data and resets the system BIOS information. If the "CMOS Settings Wrong" message is displayed during the boot up process, the fault may be corrected by pressing the F1 to enter the CMOS Setup menu. Do one of the following:

- Enter the correct CMOS setting
- Load Optimal Defaults
- Load Failsafe Defaults.

After having done one of the above, save the changes and exit the CMOS Setup menu.

The location of the clear CMOS button is shown in **Figure 4-15** below.

Figure 4-15: Clear CMOS Button

4.11 Mounting the System

WARNING:

When mounting the flat panel PC onto an arm, onto the wall or onto a panel, it is better to have more than one person to help with the installation to make sure the flat panel PC does not fall down and get damaged.

The four methods of mounting the flat panel PC are listed below.

- Wall mounting
- Panel mounting
- Arm mounting

The four mounting methods are described below.

4.11.1 Wall Mounting

To mount the UPC-12A/GM45 flat panel PC onto a wall, please follow the steps below.

Step 1: Select the location on the wall for the wall-mounting bracket.

Step 2: Carefully mark the locations of the four bracket screw holes on the wall.

Step 3: Drill four pilot holes at the marked locations on the wall for the bracket retention screws.

Step 4: Align the wall-mounting bracket screw holes with the pilot holes.

Step 5: Secure the mounting-bracket to the wall by inserting the retention screws into the four pilot holes and tightening them (**Figure 4-16**).

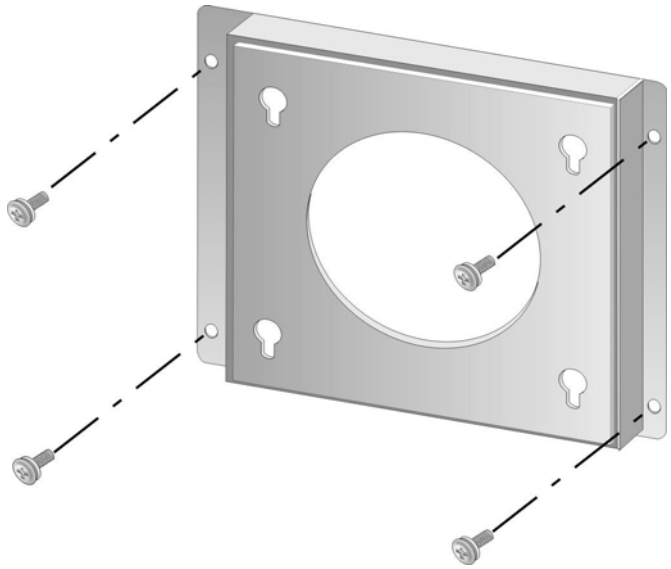


Figure 4-16: Wall-mounting Bracket

Step 6: Insert the four monitor mounting screws provided in the wall mounting kit into the four screw holes on the real panel of the monitor and tighten until the screw shank is secured against the rear panel (**Figure 4-17**).

Step 1: Align the mounting screws on the monitor rear panel with the mounting holes on the bracket.

Step 2: Carefully insert the screws through the holes and gently pull the monitor downwards until the monitor rests securely in the slotted holes (**Figure 4-17**). Ensure that all four of the mounting screws fit snuggly into their respective slotted holes.

NOTE:

In the diagram below the bracket is already installed on the wall.

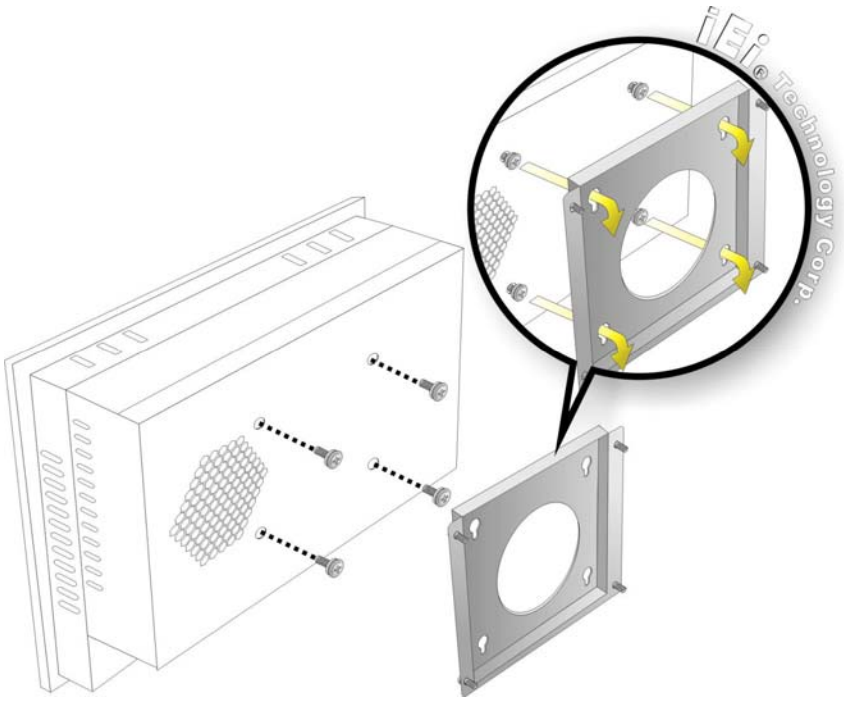


Figure 4-17: Mount the Chassis

Step 3: Secure the panel PC with the wall-mounting kit. To do this, stick the protective cushion to the wall-mounting kit first. Then, put the wall-mounting kit on the top panel of the panel PC. Carefully mark the location of the wall-mounting kit screw holes on the wall. Drill a pilot hole at the marked location on the wall. Secure the wall-mounting kit to the wall by inserting a retention screw into the pilot hole on the wall (**Figure 4-18**). This step is to avoid the panel PC being pushed apart from the wall-mounting bracket accidentally.

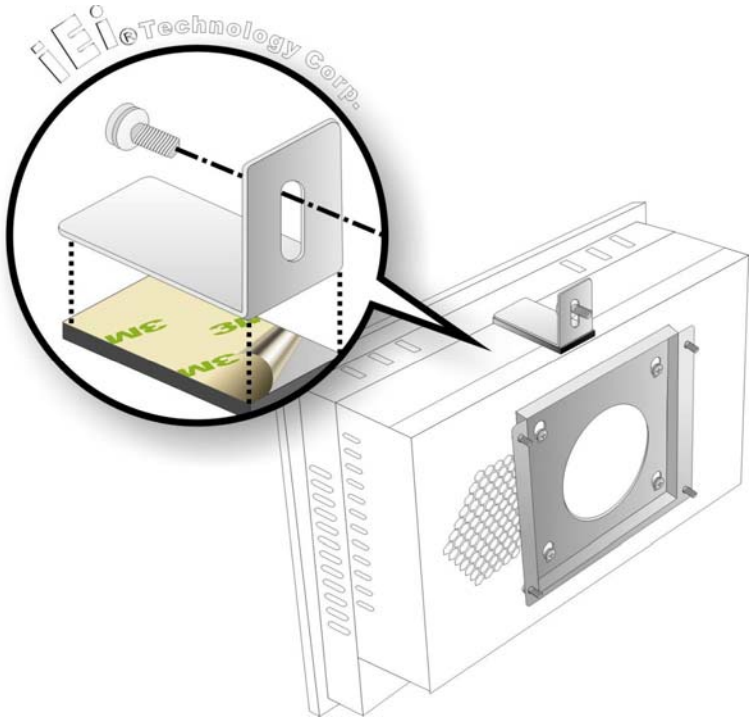


Figure 4-18: Secure the Chassis

4.11.2 Panel Mounting

To mount the UPC-12A/GM45 flat panel PC into a panel, please follow the steps below.

Step 1: Select the position in the panel to mount the panel PC.

Step 2: Cut out a section from the panel that corresponds to the dimensions of the flat panel PC chassis. The panel section that is cut out must be smaller than the size of the aluminum frame that surrounds the TFT LCD panel but just large enough for the chassis to fit through. Refer to **Figure 4-19** for the suggested cut out size.

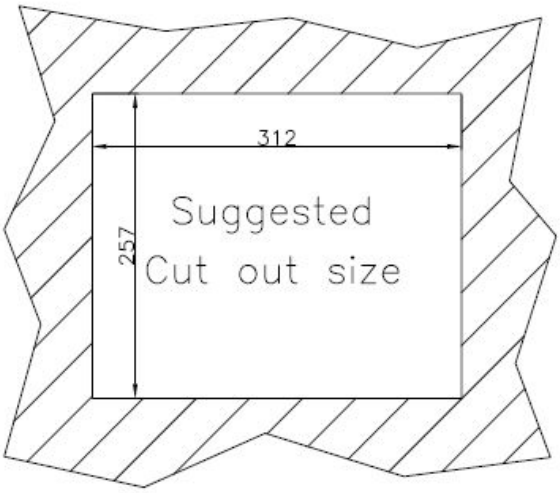


Figure 4-19: Suggested Panel Cut Out Size for UPC-12A/GM45 (Unit: mm)

Step 3: Slide the flat panel computer through the previously cut hole. The chassis at the rear of the flat panel should slide easily through the hole. Only stop sliding the panel through the hole when the back of the front aluminum frame is flush against the panel.

Step 4: Insert the panel mounting clamps into the pre-formed holes along the edges of the chassis, behind the aluminum frame. There are a total of 6 panel mounting clamps for UPC-12A/GM45.

Figure 4-20: Panel Mounting Clamp Slots (Side View)

Step 5: Tighten the screws that pass through the panel mounting clamps until the plastic caps at the front of all the screws are firmly secured to the panel (**Figure 4-21**).

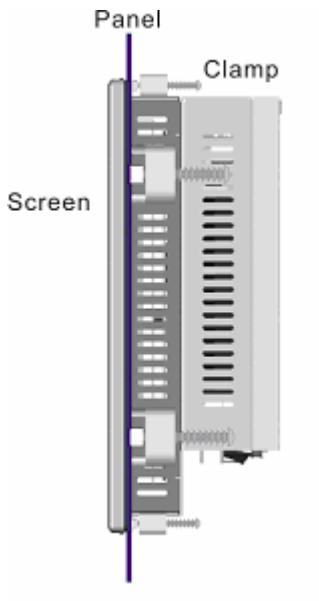


Figure 4-21: Tighten the Panel Mounting Clamp Screws

4.11.3 Arm Mounting

The flat panel PC is VESA (Video Electronics Standards Association) compliant and can be mounted on an arm with a 100 mm interface pad. To mount the flat panel PC on an arm, please follow the steps below.

Step 1: The arm is a separately purchased item. Please correctly mount the arm onto the surface it uses as a base. To do this, refer to the installation documentation that came with the mounting arm.

NOTE:

When purchasing the arm please ensure that it is VESA compliant and that the arm has a 100 mm interface pad. If the mounting arm is not VESA compliant it cannot be used to support the flat panel PC.

Step 2: Once the mounting arm has been firmly attached to the surface, lift the flat panel PC onto the interface pad of the mounting arm.

Step 3: Align the retention screw holes on the mounting arm interface with those in the flat panel PC. The flat panel PC arm mount retention screw holes are shown in **Figure 4-22**.

Figure 4-22: Arm Mounting Retention Screw Holes

Step 4: Secure the flat panel PC to the interface pad by inserting four retention screws through the bottom of the mounting arm interface pad and into the flat panel PC.

4.12 Bottom Panel Switch and Connectors

4.12.1 AT/ATX Mode Selection

AT and ATX power modes can both be used on the EP series panel PC. The selection is made through an AT/ATX switch on the chassis rear panel (**Figure 4-23**). To select AT mode or ATX mode, follow the steps below.

Step 1: Locate the AT/ATX switch on the chassis rear panel (**Figure 4-23**).

Figure 4-23: AT/ATX Switch

Step 2: Adjust the AT/ATX switch. The default mode is ATX mode (**Figure 4-23**).

4.12.2 LAN Connection

There is one external RJ-45 LAN connector. The RJ-45 connector enables connection to an external network. To connect a LAN cable with an RJ-45 connector, please follow the instructions below.

Step 1: **Locate the RJ-45 connectors** on the I/O interface panel of the UPC-12A/GM45 series.

Step 2: **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the I/O interface panel of the UPC-12A/GM45 series. See **Figure 4-24**.

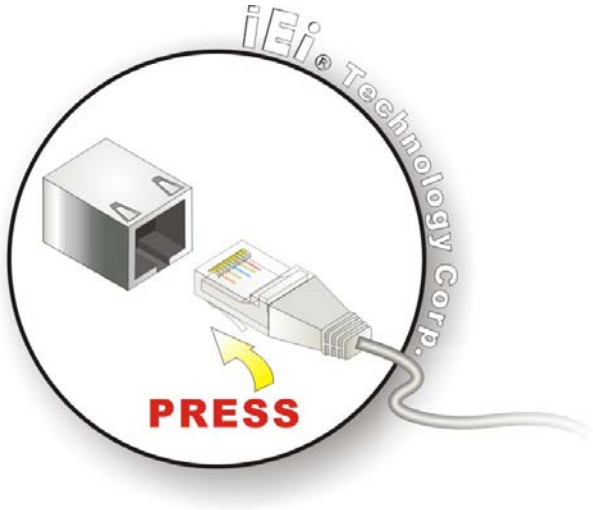


Figure 4-24: LAN Connection

Step 3: **Insert the LAN cable RJ-45 connector.** Once aligned, gently insert the LAN cable RJ-45 connector into the RJ-45 connector.

4.12.3 Serial Device Connection

The UPC-12A/GM45 series has four male DB-9 connectors for serial devices to be connected. Follow the steps below to connect a serial device to the UPC-12A/GM45 series panel PC.

Step 1: **Locate the DB-9 connector**. The location of the DB-9 connector is shown in **Chapter 2**.

Step 2: **Insert the serial connector**. Insert the DB-9 connector of a serial device into the DB-9 connector on the I/O interface panel. See **Figure 4-25**.

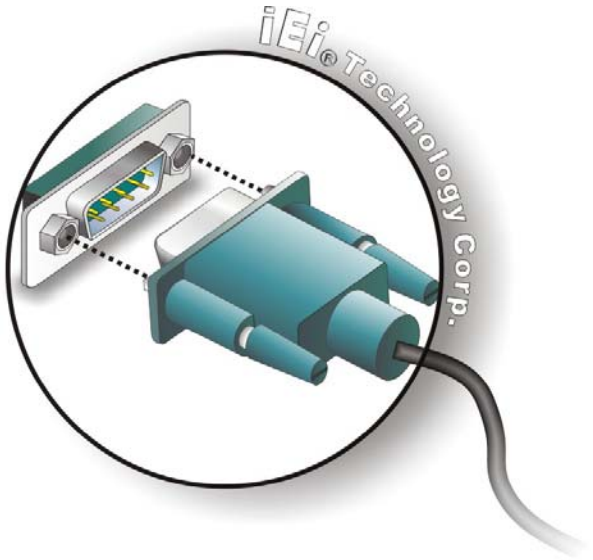


Figure 4-25: Serial Device Connector

Step 3: **Secure the connector**. Secure the serial device connector to the external interface by tightening the two retention screws on either side of the connector.

4.12.4 USB Device Connection

There are four external USB 2.0 connectors. All connectors are perpendicular to the UPC-12A/GM45 series. To connect a USB 2.0 or USB 1.1 device, please follow the instructions below.

Step 1: **Located the USB connectors**. The locations of the USB connectors are shown in **Chapter 2**.

Step 2: **Align the connectors.** Align the USB device connector with one of the connectors on the I/O interface panel. See **Figure 4-26**.

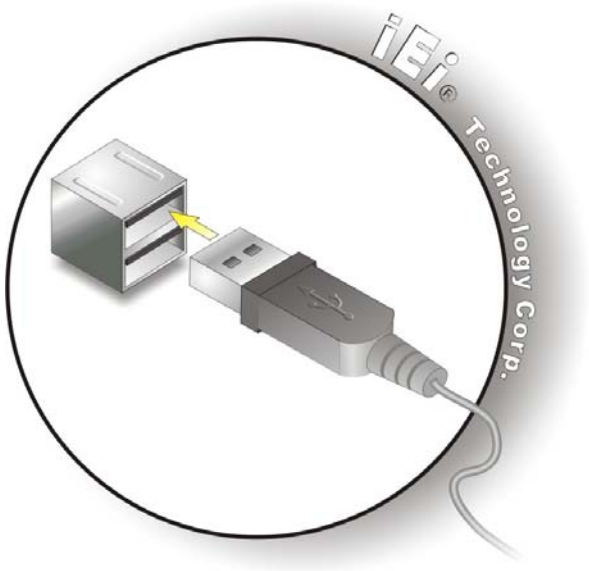


Figure 4-26: USB Device Connection

Step 3: **Insert the device connector.** Once aligned, gently insert the USB device connector into the onboard connector.

4.12.5 VGA Monitor Connection

The UPC-12A/GM45 has a single female DB-15 connector on the bottom panel. The DB-15 connector is connected to a CRT or VGA monitor. To connect a monitor to the UPC-12A/GM45, please follow the instructions below.

Step 1: **Locate the female DB-15 connector**. The location of the female DB-15 connector is shown in **Chapter 1**.

Step 2: **Align the VGA connector**. Align the male DB-15 connector on the VGA screen cable with the female DB-15 connector on the external peripheral interface.

Step 3: **Insert the VGA connector** Once the connectors are properly aligned with the insert the male connector from the VGA screen into the female connector on the UPC-12A/GM45. See **Figure 4-27**.

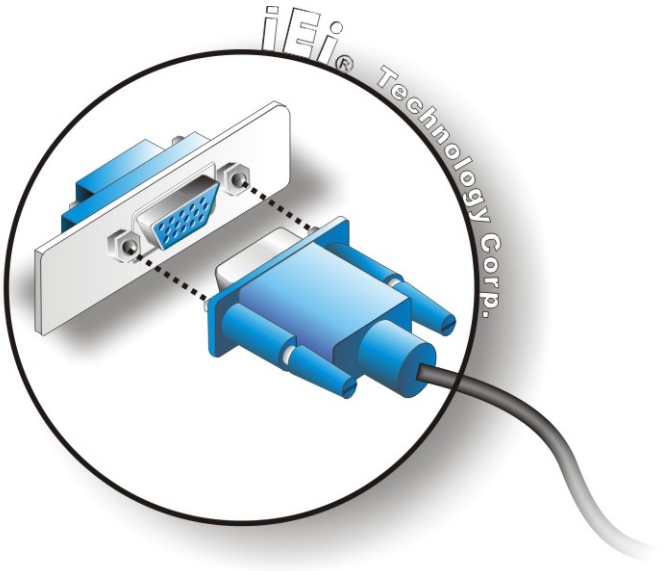


Figure 4-27: VGA Connector

Step 4: **Secure the connector**. Secure the DB-15 VGA connector from the VGA monitor to the external interface by tightening the two retention screws on either side of the connector.

Chapter

5

System Maintenance

5.1 System Maintenance Introduction

If the components of the UPC-12A/GM45 series fail they must be replaced. Components that can be replaced include:

- CF module
- SATA HDD
- Wireless LAN module
- SO-DIMM module

Please contact the system reseller or vendor to purchase the replacement parts. Back cover removal instructions and component replacement for the UPC-12A/GM45 series are described below.

5.2 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the maintenance of the UPC-12A/GM45 may result in permanent damage to the UPC-12A/GM45 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the EP series. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the EP series is accessed internally, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding***:- Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: When configuring the EP series, place it on an antic-static pad. This reduces the possibility of ESD damaging the EP series.

- ***Only handle the edges of the PCB***:- When handling the PCB, hold the PCB by the edges.

5.3 Turn off the Power

WARNING:

Failing to turn off the system before opening it can cause permanent damage to the system and serious or fatal injury to the user.

Before any maintenance procedures are carried out on the system, make sure the system is turned off.

5.4 Replacing Components

5.4.1 Hard Disk Drive Replacement

If the HDD fails, please follow the steps below:

Step 1: **Follow all anti-static procedures**. See **Section 5.2**.

Step 2: **Turn off the power**. See **Section 5.3**.

Step 3: Follow the steps described in **Section 4.6** to replace the HDD.

5.4.2 CF Card Replacement

The UPC-12A/GM45 has one CF Type II slot. To replace the CF card, follow the instructions below.

Step 1: **Follow all anti-static procedures**. See **Section 5.2**.

Step 2: **Turn off the power**. See **Section 5.3**.

Step 3: Follow the steps described in **Section 4.5** to replace the CF card.

5.4.3 Wireless Module Replacement

To replace the wireless module, please follow the steps below.

Step 1: **Follow all anti-static procedures**. See **Section 5.2**.

Step 2: Turn off the power. See **Section 5.3**.

Step 3: Follow the steps described in **Section 4.8** to replace the wireless module.

5.4.4 SO-DIMM Module Replacement

WARNING:

Using incorrectly specified SO-DIMM may cause permanently damage the UPC-12A/GM45. Please make sure the purchased SO-DIMM complies with the memory specifications of the UPC-12A/GM45.

To replace the SO-DIMM module, please follow the steps below.

Step 1: **Follow all anti-static procedures**. See **Section 5.2**.

Step 2: **Turn off the power**. See **Section 5.3**.

Step 3: **Remove the internal aluminum chassis**. See **Section 4.10.1**.

Step 4: **Locate the SO-DIMM module**. The SO-DIMM module is located below the CPU heat sink. See **Figure 5-1**.

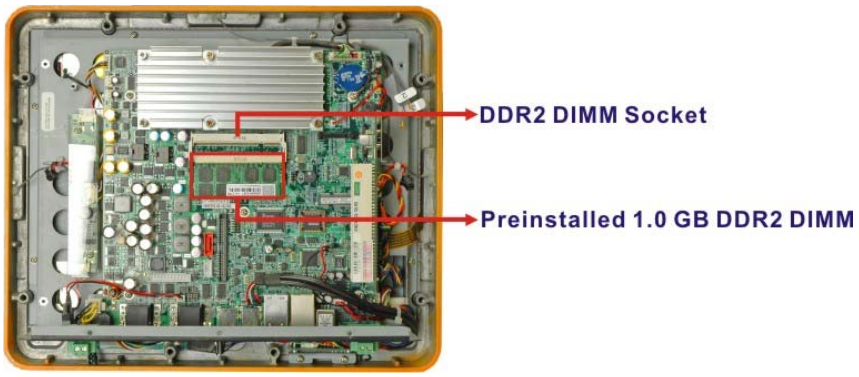


Figure 5-1: SO-DIMM Socket Location

Step 5: **Open the SO-DIMM socket handles**. The SO-DIMM socket has two handles that secure the SO-DIMM into the socket. Before the SO-DIMM can be removed from the socket, the handles must be opened.

Step 6: **Align the SO-DIMM with the socket**. Align the notch on the memory with the notch on the memory socket.

Step 7: **Insert the SO-DIMM**. Push the memory in at a 20º angle.

Step 8: **Seat the SO-DIMM**. Gently push downwards and the arms clip into place.

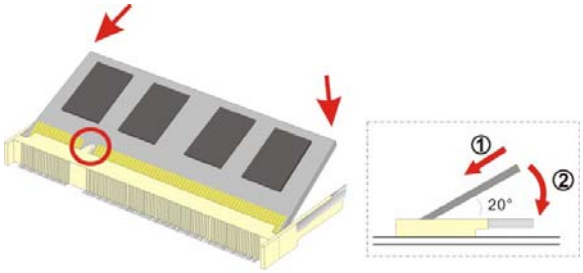


Figure 5-2: Installing a SO-DIMM

5.4.5 Gasket Replacement

A gasket used for a long time may gradually lose its ability to protect the monitor from fluids and vapors; scratches or dirt may also accumulate. It is recommended that the gasket be replaced yearly.

NOTE:

If the monitor is mounted vertically, first remove it and place it on a flat, level surface with the display screen facing down before changing the gasket.

Step 1: Remove the old gasket from the sides of the monitor.

Step 2: Attach the new gasket to the monitor. Make sure the gasket fits precisely into the groove along the edges of the monitor's front panel.

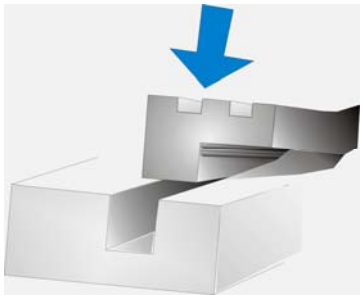


Figure 5-3: Gasket Replacement

NOTE:

Compliance with the IP 65 standard depends on correct installation of the gasket. Be sure to check that the gasket is properly installed after changing it.

5.4.6 Motherboard Replacement

A user cannot replace a motherboard. If the motherboard fails it must be shipped back to IEI to be replaced. If the system motherboard has failed, please contact the system vendor, reseller or an IEI sales person directly.

Chapter

6

AMI BIOS Setup

6.1 Introduction

The BIOS is programmed onto the BIOS chip. The BIOS setup program allows changes to certain system settings. This chapter outlines the options that can be changed.

6.1.1 Starting Setup

The AMI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the **DELETE** key as soon as the system is turned on or
2. Press the **DELETE** key when the "**Press Del to enter SETUP**" message appears on the screen.

If the message disappears before the **DELETE** key is pressed, restart the computer and try again.

6.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the PageUp and PageDown keys to change entries, press **F1** for help and press **Esc** to quit. Navigation keys are shown in.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
Esc key	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
Page Up key	Increase the numeric value or make changes

Key	Function
Page Dn key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 /F3 key	Change color from total 16 colors. F2 to select color forward.
F10 key	Save all the CMOS changes, only for Main Menu

Table 6-1: BIOS Navigation Keys

6.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **Esc** or the **F1** key again.

6.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the jumper described in Chapter **5**.

6.1.5 BIOS Menu Bar

The **menu bar** on top of the BIOS screen has the following main items:

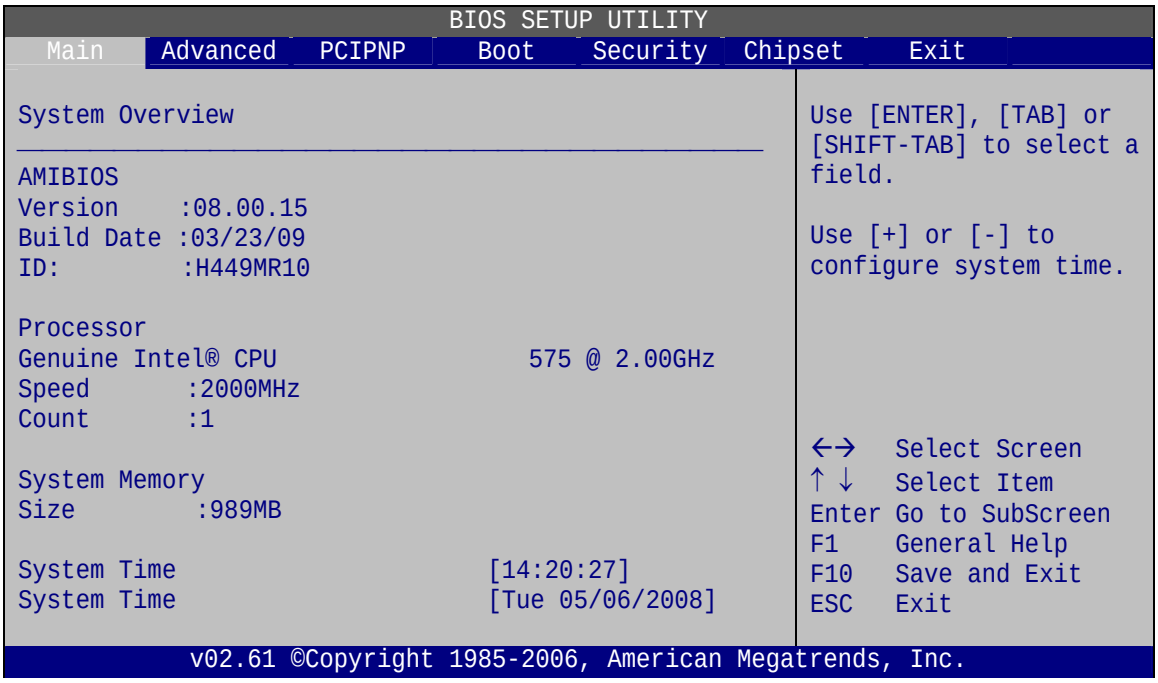
- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- PCIPnP – Changes the advanced PCI/PnP Settings
- Boot – Changes the system boot configuration.
- Security – Sets User and Supervisor Passwords.
- Chipset – Changes the chipset settings.
- Exit – Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

6.2 Main

The **Main** BIOS menu (**BIOS Menu 1**) appears when the **BIOS Setup** program is entered.

The **Main** menu gives an overview of the basic system information.



BIOS Menu 1: Main

➔ System Overview

The **System Overview** lists a brief summary of different system components. The fields in **System Overview** cannot be changed. The items shown in the system overview include:

- AMI BIOS: Displays auto-detected BIOS information
  - **Version:** Current BIOS version
  - **Build Date:** Date the current BIOS version was made
  - **ID:** Installed BIOS ID
- Processor: Displays auto-detected CPU specifications
  - **Type:** Names the currently installed processor
  - **Speed:** Lists the processor speed
  - **Count:** The number of CPUs on the motherboard
- System Memory: Displays the auto-detected system memory.

- **Size:** Lists memory size

The System Overview field also has two user configurable fields:

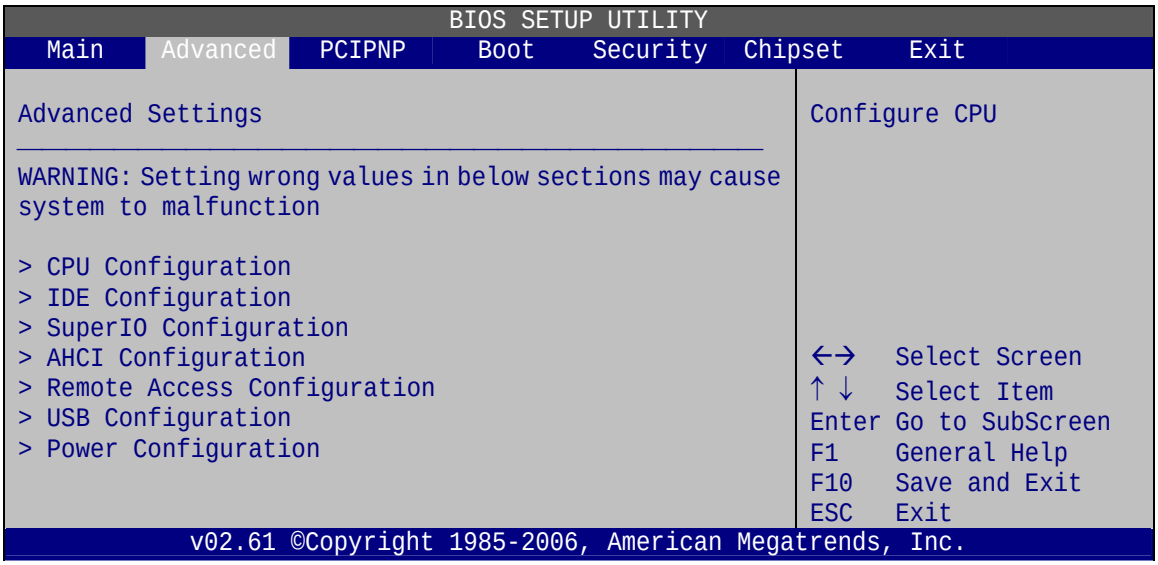
6.3 Advanced

Use the **Advanced** menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:

WARNING!

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

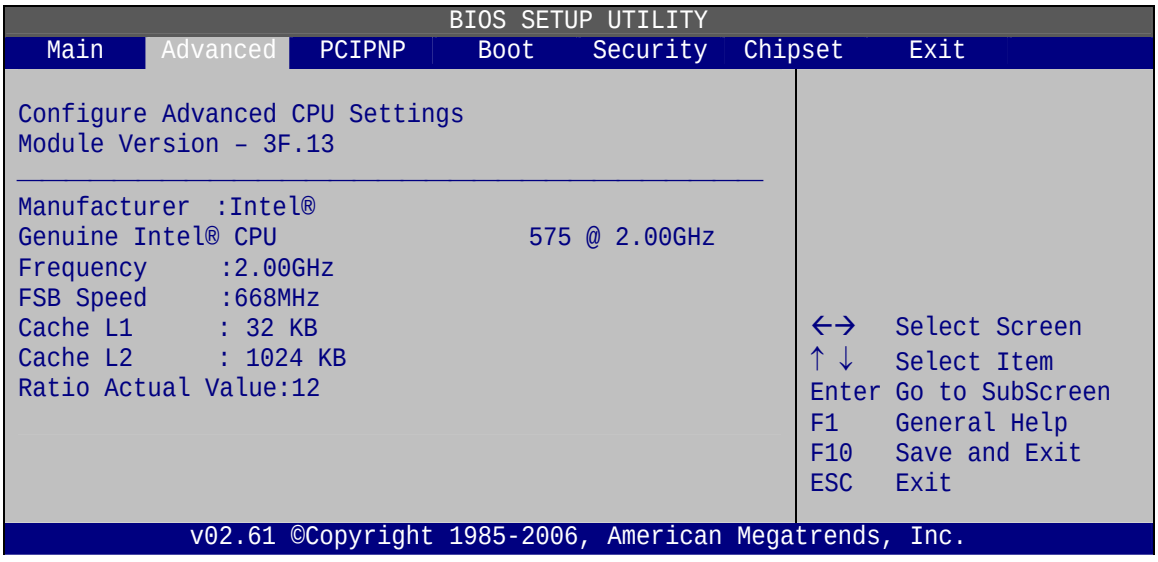
- CPU Configuration (see **Section 6.3.1**)
- IDE Configuration (see **Section 6.3.2**)
- Super IO Configuration (see **Section 6.3.3**)
- AHCI Configuration (see **Section 6.3.4**)
- Remote Access Configuration (see **Section 6.3.5**)
- USB Configuration (see **Section 6.3.6**)
- Power Configuration (see **Section 6.3.7**)



BIOS Menu 2: Advanced

6.3.1 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 3**) to view detailed CPU specifications and configure the CPU.



BIOS Menu 3: CPU Configuration

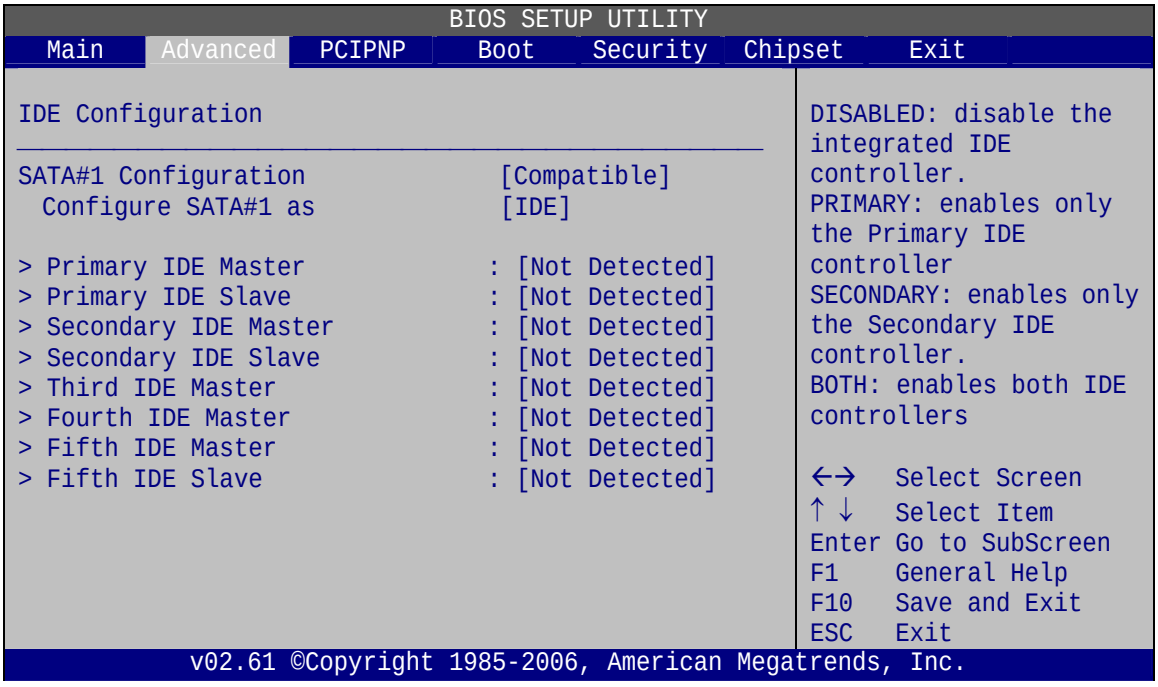
The CPU Configuration menu (**BIOS Menu 3**) lists the following CPU details:

- Manufacturer: Lists the name of the CPU manufacturer

- Brand String: Lists the brand name of the CPU being used
- Frequency: Lists the CPU processing speed
- FSB Speed: Lists the FSB speed
- Cache L1: Lists the CPU L1 cache size
- Cache L2: Lists the CPU L2 cache size

6.3.2 IDE Configuration

Use the **IDE Configuration** menu (**BIOS Menu 4**) to change and/or set the configuration of the IDE devices installed in the system.


BIOS SETUP UTILITY
Main Advanced PCIPNP Boot Security Chipset Exit
IDE Configuration
SATA#1 Configuration [Compatible]
Configure SATA#1 as [IDE]
> Primary IDE Master : [Not Detected]
> Primary IDE Slave : [Not Detected]
> Secondary IDE Master : [Not Detected]
> Secondary IDE Slave : [Not Detected]
> Third IDE Master : [Not Detected]
> Fourth IDE Master : [Not Detected]
> Fifth IDE Master : [Not Detected]
> Fifth IDE Slave : [Not Detected]
DISABLED: disable the integrated IDE controller.
PRIMARY: enables only the Primary IDE controller
SECONDARY: enables only the Secondary IDE controller.
BOTH: enables both IDE controllers
←→ Select Screen
↑ ↓ Select Item
Enter Go to SubScreen
F1 General Help
F10 Save and Exit
ESC Exit
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BIOS Menu 4: IDE Configuration

➔ **SATA#1 Configuration [Compatible]**

Use the **SATA#1 Configuration** option to configure the ATA/IDE controller.

➔ **Disabled** Disables the on-board ATA/IDE controller.

➔ **Compatible** **DEFAULT** Configures the on-board ATA/IDE controller to be in compatible mode. In this mode, a SATA channel will replace one of the IDE channels. This mode supports up to 4 storage devices.

➔ **Enhanced** Configures the on-board ATA/IDE controller to be in Enhanced mode. In this mode, IDE channels and SATA channels are separated. This mode supports up to 6 storage devices. Some legacy OS do not support this mode.

➔ **Configure SATA as [IDE]**

Use the **Configure SATA as** option to configure SATA devices as normal IDE devices.

➔ **IDE** **DEFAULT** Configures SATA devices as normal IDE device.

➔ **RAID** Configures SATA devices as RAID device.

➔ **AHCI** Configures SATA devices as AHCI device.

➔ **IDE Master and IDE Slave**

When entering setup, BIOS auto detects the presence of IDE devices. BIOS displays the status of the auto detected IDE devices. The following IDE devices are detected and are shown in the **IDE Configuration** menu:

- Primary IDE Master
- Primary IDE Slave
- Secondary IDE Master
- Secondary IDE Slave
- Third IDE Master
- Fourth IDE Master
- Fifth IDE Master
- Fifth IDE Slave

The **IDE Configuration** menu (**BIOS Menu 4**) allows changes to the configurations for the IDE devices installed in the system. If an IDE device is detected, and one of the above listed four BIOS configuration options are selected, the IDE configuration options shown in **Section 6.3.2.1** appear.

6.3.2.1 IDE Master, IDE Slave

Use the **IDE Master** and **IDE Slave** configuration menu to view both primary and secondary IDE device details and configure the IDE devices connected to the system.

```
                        BIOS SETUP UTILITY
  Main    Advanced   PCIPNP    Boot    Security   Chipset    Exit

Primary IDE Master                          Select the type of device
                                            connected to the system
Device        :Not Detected

Type                              [Auto]
LBA/Large Mode                    [Auto]
Block (Multi-Sector Transfer)     [Auto]
PIO Mode                          [Auto]    ←→   Select Screen
DMA Mode                          [Auto]    ↑ ↓  Select Item
S.M.A.R.T.                        [Auto]    Enter Go to SubScreen
32Bit Data Transfer               [Enabled] F1   General Help
                                            F10  Save and Exit
                                            ESC  Exit

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```

BIOS Menu 5: IDE Master and IDE Slave Configuration

➔ **Auto-Detected Drive Parameters**

The “grayed-out” items in the left frame are IDE disk drive parameters automatically detected from the firmware of the selected IDE disk drive. The drive parameters are listed as follows:

- Device: Lists the device type (e.g. hard disk, CD-ROM etc.)
- Type: Indicates the type of devices a user can manually select
- Vendor: Lists the device manufacturer
- Size: List the storage capacity of the device.
- LBA Mode: Indicates whether the LBA (Logical Block Addressing) is a method of addressing data on a disk drive is supported or not.

- Block Mode: Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.
- PIO Mode: Indicates the PIO mode of the installed device.
- Async DMA: Indicates the highest Asynchronous DMA Mode that is supported.
- Ultra DMA: Indicates the highest Synchronous DMA Mode that is supported.
- S.M.A.R.T.: Indicates whether or not the Self-Monitoring Analysis and Reporting Technology protocol is supported.
- 32Bit Data Transfer: Enables 32-bit data transfer.

➔ **Type [Auto]**

Use the **Type** BIOS option select the type of device the AMIBIOS attempts to boot from after the Power-On Self-Test (POST) is complete.

➔ **Not Installed**		BIOS is prevented from searching for an IDE disk drive on the specified channel.
➔ **Auto**	**DEFAULT**	The BIOS auto detects the IDE disk drive type attached to the specified channel. This setting should be used if an IDE hard disk drive is attached to the specified channel.
➔ **CD/DVD**		The CD/DVD option specifies that an IDE CD-ROM drive is attached to the specified IDE channel. The BIOS does not attempt to search for other types of IDE disk drives on the specified channel.
➔ **ARMD**		This option specifies an ATAPI Removable Media Device. These include, but are not limited to: ZIP LS-120

➔ **LBA/Large Mode [Auto]**

Use the **LBA/Large Mode** option to disable or enable BIOS to auto detects LBA (Logical Block Addressing). LBA is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB.

➔ **Disabled** BIOS is prevented from using the LBA mode control on the specified channel.

➔ **Auto** **DEFAULT** BIOS auto detects the LBA mode control on the specified channel.

➔ **Block (Multi Sector Transfer) [Auto]**

Use the **Block (Multi Sector Transfer)** to disable or enable BIOS to auto detect if the device supports multi-sector transfers.

➔ **Disabled** BIOS is prevented from using Multi-Sector Transfer on the specified channel. The data to and from the device occurs one sector at a time.

➔ **Auto** **DEFAULT** BIOS auto detects Multi-Sector Transfer support on the drive on the specified channel. If supported the data transfer to and from the device occurs multiple sectors at a time.

➔ **PIO Mode [Auto]**

Use the **PIO Mode** option to select the IDE PIO (Programmable I/O) mode program timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases.

➔ **Auto** **DEFAULT** BIOS auto detects the PIO mode. Use this value if the IDE disk drive support cannot be determined.

- ➔ **0** PIO mode 0 selected with a maximum transfer rate of 3.3 MB/s
- ➔ **1** PIO mode 1 selected with a maximum transfer rate of 5.2 MB/s
- ➔ **2** PIO mode 2 selected with a maximum transfer rate of 8.3 MB/s
- ➔ **3** PIO mode 3 selected with a maximum transfer rate of 11.1 MB/s
- ➔ **4** PIO mode 4 selected with a maximum transfer rate of 16.6 MB/s

  (This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.)

➔ **DMA Mode [Auto]**

Use the **DMA Mode** BIOS selection to adjust the DMA mode options.

- ➔ **Auto** **DEFAULT** BIOS auto detects the DMA mode. Use this value if the IDE disk drive support cannot be determined.
- ➔ **SWDMA0** Single Word DMA mode 0 selected with a maximum data transfer rate of 2.1 MB/s
- ➔ **SWDMA1** Single Word DMA mode 1 selected with a maximum data transfer rate of 4.2 MB/s
- ➔ **SWDMA2** Single Word DMA mode 2 selected with a maximum data transfer rate of 8.3 MB/s
- ➔ **MWDMA0** Multi Word DMA mode 0 selected with a maximum data transfer rate of 4.2 MB/s
- ➔ **MWDMA1** Multi Word DMA mode 1 selected with a maximum data transfer rate of 13.3 MB/s
- ➔ **MWDMA2** Multi Word DMA mode 2 selected with a maximum data transfer rate of 16.6 MB/s

- **UDMA0** Ultra DMA mode 0 selected with a maximum data transfer rate of 16.6 MB/s
- **UDMA1** Ultra DMA mode 1 selected with a maximum data transfer rate of 25 MB/s
- **UDMA2** Ultra DMA mode 2 selected with a maximum data transfer rate of 33.3 MB/s
- **UDMA3** Ultra DMA mode 3 selected with a maximum data transfer rate of 44 MB/s (To use this mode, it is required that an 80-conductor ATA cable is used.)
- **UDMA4** Ultra DMA mode 4 selected with a maximum data transfer rate of 66.6 MB/s (To use this mode, it is required that an 80-conductor ATA cable is used.)
- **UDMA5** Ultra DMA mode 5 selected with a maximum data transfer rate of 99.9 MB/s (To use this mode, it is required that an 80-conductor ATA cable is used.)

➔ **S.M.A.R.T [Auto]**

Use the **S.M.A.R.T** option to auto-detect, disable or enable Self-Monitoring Analysis and Reporting Technology (SMART) on the drive on the specified channel. **S.M.A.R.T** predicts impending drive failures. The **S.M.A.R.T** BIOS option enables or disables this function.

- **Auto** **DEFAULT** BIOS auto detects HDD SMART support.
- **Disabled** Prevents BIOS from using the HDD SMART feature.
- **Enabled** Allows BIOS to use the HDD SMART feature

➔ **32Bit Data Transfer [Enabled]**

Use the **32Bit Data Transfer** BIOS option to enables or disable 32-bit data transfers.

➔ **Disabled** Prevents the BIOS from using 32-bit data transfers.

➔ **Enabled** **DEFAULT** Allows BIOS to use 32-bit data transfers on supported hard disk drives.

6.3.3 Super IO Configuration

Use the **Super IO Configuration** menu (**BIOS Menu 6**) to set or change the configurations for the FDD controllers, parallel ports and serial ports.

```
                        BIOS SETUP UTILITY
  Main   Advanced   PCIPNP   Boot   Security   Chipset   Exit

Configure ITE8718 Super IO Chipset          Allows BIOS to select
                                            Serial Port Base
Serial Port1 Address          [3F8/IRQ4]    Addresses
Serial Port2 Address          [2F8/IRQ3]
Serial Port3 Address          [3E8]
  Serial Port3 IRQ            [10]
Serial Port4 Address          [2E8]
  Serial Port4 IRQ            [10]          ←→  Select Screen
Select RS232 or RS422/RS485   [BY HARDWARE] ↑ ↓  Select Item
                                            Enter Go to SubScreen
                                            F1    General Help
                                            F10   Save and Exit
                                            ESC   Exit

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```

BIOS Menu 6: Super IO Configuration

➔ **Serial Port1 Address [3F8/IRQ4]**

Use the **Serial Port1 Address** option to select the Serial Port 1 base address.

➔ **Disabled** No base address is assigned to Serial Port 1

➔ **3F8/IRQ4** **DEFAULT** Serial Port 1 I/O port address is 3F8 and the interrupt address is IRQ4

➔ **3E8/IRQ4** Serial Port 1 I/O port address is 3E8 and the interrupt address is IRQ4

- **2E8/IRQ3** Serial Port 1 I/O port address is 2E8 and the interrupt address is IRQ3

➔ **Serial Port2 Address [2F8/IRQ3]**

Use the **Serial Port2 Address** option to select the Serial Port 2 base address.

- **Disabled** No base address is assigned to Serial Port 2
- **2F8/IRQ3** **DEFAULT** Serial Port 2 I/O port address is 3F8 and the interrupt address is IRQ3
- **3E8/IRQ4** Serial Port 2 I/O port address is 3E8 and the interrupt address is IRQ4
- **2E8/IRQ3** Serial Port 2 I/O port address is 2E8 and the interrupt address is IRQ3

➔ **Serial Port3 Address [3E8]**

Use the **Serial Port3 Address** option to select the base addresses for serial port 3

- **Disabled** No base address is assigned to serial port 3
- **3E8** **DEFAULT** Serial port 3 I/O port address is 3E8
- **2E8** Serial port 3 I/O port address is 2E8

➔ **Serial Port3 IRQ [10]**

Use the **Serial Port3 IRQ** option to select the interrupt address for serial port 3.

- **10** **DEFAULT** Serial port 3 IRQ address is 10

➔ **Serial Port4 Address [2E8]**

Use the **Serial Port4 IRQ** option to select the interrupt address for serial port 4.

- ➔ **Disabled** No base address is assigned to serial port 3
- ➔ **3E8** Serial port 4 I/O port address is 3E8
- ➔ **2E8** **DEFAULT** Serial port 4 I/O port address is 2E8

➔ **Serial Port4 IRQ [10]**

Use the **Serial Port4 IRQ** option to select the interrupt address for serial port 4.

- ➔ **10** **DEFAULT** Serial port 4 IRQ address is 10

➔ **Select RS232 or RS422/RS485 [BY HARDWARE]**

Use the **Select RS232 or RS422/RS485** option to select the Serial Port 4 signaling mode.

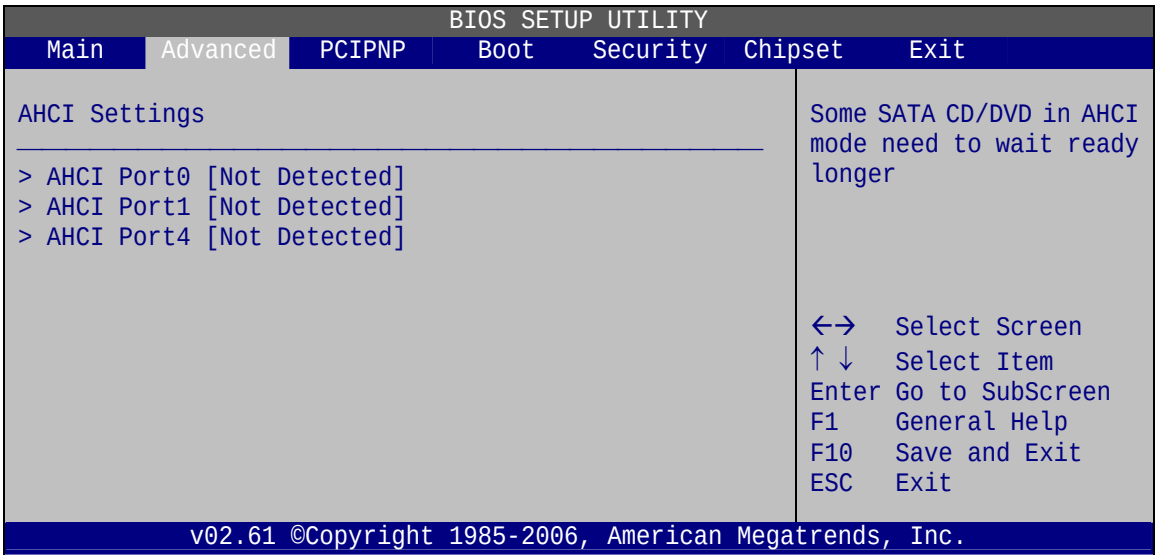
- ➔ **RS232** Serial Port 4 signaling mode is RS-232/422
- ➔ **RS422/RS485** Serial Port 4 signaling mode is RS-485
- ➔ **BY HARDWARE** **DEFAULT** Serial Port 4 signaling mode is set by onboard jumper

6.3.4 AHCI Configuration

NOTE:

Advanced Host Controller Interface (AHCI) is a new programming interface for SATA host controllers. AHCI systems do not have master/slave designation for SATA devices, each device is treated as a master, and hardware-assisted native command queuing.

Use the **AHCI Settings** menu (**BIOS Menu 7**) to report on the auto-detection of devices connected to the onboard SATA drive connectors.


BIOS SETUP UTILITY
Main Advanced PCIPNP Boot Security Chipset Exit
AHCI Settings
> AHCI Port0 [Not Detected]
> AHCI Port1 [Not Detected]
> AHCI Port4 [Not Detected]
Some SATA CD/DVD in AHCI mode need to wait ready longer
←→ Select Screen
↑ ↓ Select Item
Enter Go to SubScreen
F1 General Help
F10 Save and Exit
ESC Exit
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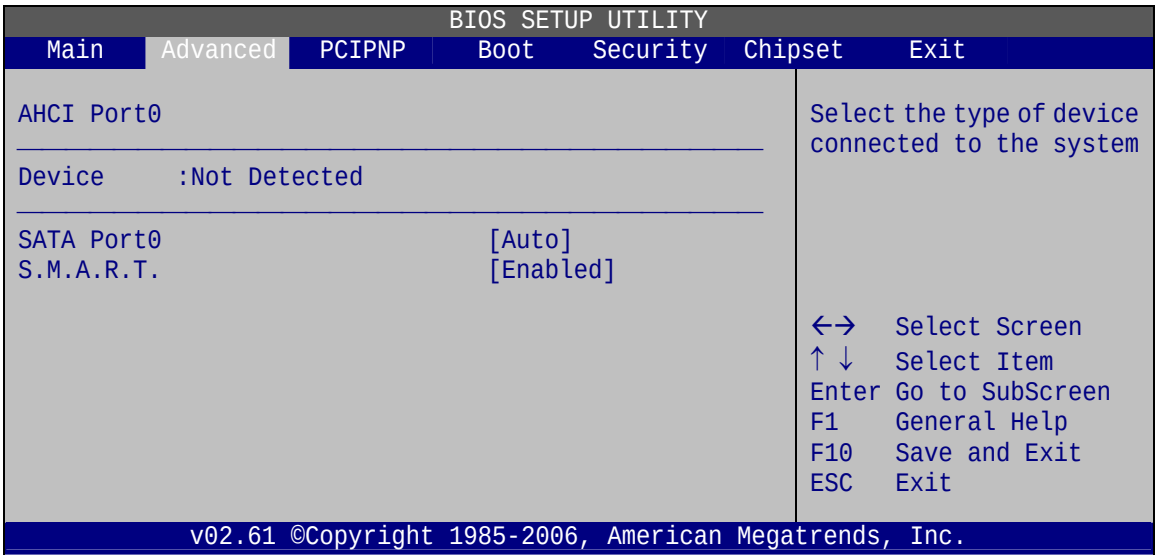
BIOS Menu 7: AHCI Configuration

➔ **AHCI Port n [Not Detected]**

Use the **AHCI Port n** BIOS option to check what AHCI (Advanced Host Controller Interface) devices are detected to a specified SATA drive connector. If a device is detected, selecting the BIOS option, e.g. "**AHCI Port 3**" opens a new window.

6.3.4.1 AHCI Port n

Use the **AHCI Port n** configuration menu (**BIOS Menu 8**) to configure the drive connected to SATA connector n.



BIOS Menu 8: AHCI Port n Configuration Menu

➔ **SATA Port n [Auto]**

Use the **SATA Port n** option to enable the system to auto-detect the type of drive connected to SATA drive connector n.

➔ **S.M.A.R.T [Enabled]**

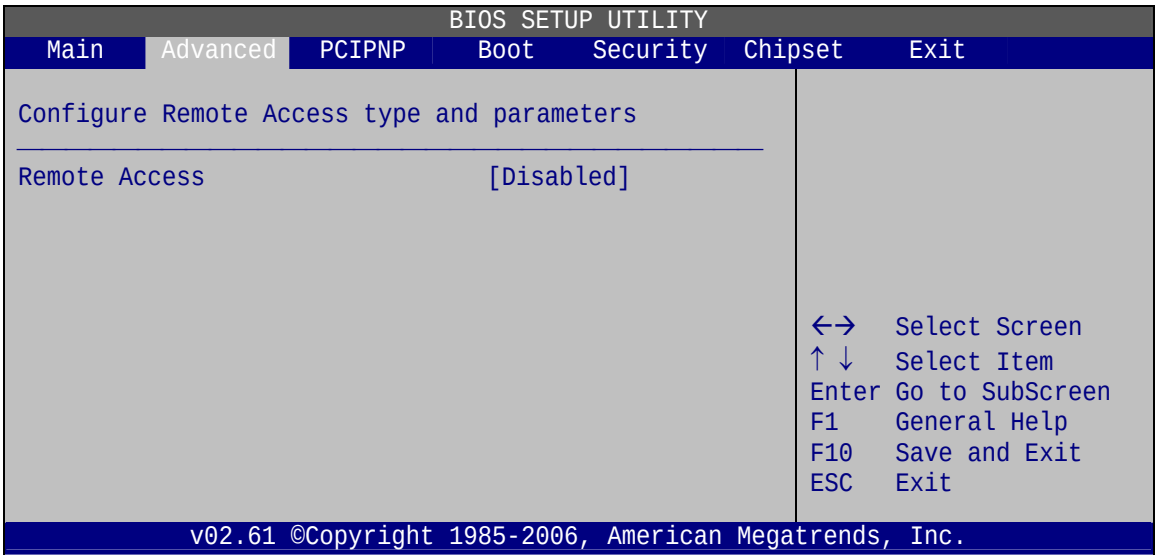
Use the **S.M.A.R.T** option to enable S.M.A.R.T (Self-Monitoring, Analysis, and Reporting Technology) on the drive connected to SATA drive connector n.

➔ **Enabled** **DEFAULT** S.M.A.R.T is enabled on the drive connected to SATA drive connector n on the system

➔ **Disabled** S.M.A.R.T is disabled on the drive connected to SATA drive connector n on the system

6.3.5 Remote Access Configuration

Use the **Remote Access Configuration** menu (**BIOS Menu 9**) to configure remote access parameters. The **Remote Access Configuration** is an AMIBIOS feature and allows a remote host running a terminal program to display and configure the BIOS settings.



BIOS Menu 9: Remote Access Configuration

➔ **Remote Access [Disabled]**

Use the **Remote Access** option to enable or disable access to the remote functionalities of the system.

➔ **Disabled**	**DEFAULT**	Remote access is disabled.
➔ **Enabled**		Remote access configuration options shown below appear: Serial Port Number Serial Port Mode Redirection after BIOS POST Terminal Type These configuration options are discussed below.

➔ **Serial Port Number [COM1]**

Use the **Serial Port Number** option allows to select the serial port used for remote access.

- ➔ **COM1** **DEFAULT** System is remotely accessed through COM1
- ➔ **COM2** System is remotely accessed through COM2
- ➔ **COM3** System is remotely accessed through COM3
- ➔ **COM4** System is remotely accessed through COM4

NOTE: Make sure the selected COM port is enabled through the Super I/O configuration menu.

➔ **Base Address, IRQ [3F8h,4]**

The **Base Address, IRQ** option cannot be configured and only shows the interrupt address of the serial port listed above.

➔ **Serial Port Mode [115200 8,n,1]**

Use the **Serial Port Mode** option to select baud rate through which the console redirection is made. The following configuration options are available

- 115200 8,n,1 **DEFAULT**
- 57600 8,n,1
- 38400 8,n,1
- 19200 8,n,1
- 09600 8,n,1

NOTE:

Identical baud rate setting musts be set on the host (a management computer running a terminal software) and the slave

➔ **Redirection After BIOS POST [Always]**

Use the **Redirection After BIOS POST** option to specify when console redirection should occur.

➔ **Disabled**		The console is not redirected after POST
➔ **Boot Loader**		Redirection is active during POST and during Boot Loader
➔ **Always**	**DEFAULT**	Redirection is always active (Some OSes may not work if set to Always)

➔ **Terminal Type [ANSI]**

Use the **Terminal Type** BIOS option to specify the remote terminal type.

➔ **ANSI**	**DEFAULT**	The target terminal type is ANSI
➔ **VT100**		The target terminal type is VT100
➔ **VT-UTF8**		The target terminal type is VT-UTF8

6.3.6 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 10**) to read USB configuration information and configure the USB settings.

```
                        BIOS SETUP UTILITY
  Main   Advanced   PCIPNP   Boot   Security   Chipset   Exit

USB Configuration                                  Enables USB host
_____________________________________________      controllers
Module Version - 2.24.0-11.4

USB Devices Enabled:
            None

USB Function                    [Enabled]          ←→   Select Screen
USB 2.0 Controller              [Enabled]          ↑ ↓  Select Item
Legacy USB Support              [Enabled]          Enter Go to SubScreen
USB 2.0 Controller Mode         [HiSpeed]          F1   General Help
                                                   F10  Save and Exit
                                                   ESC  Exit

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```

BIOS Menu 10: USB Configuration

➔ **USB Configuration**

The **USB Configuration** field shows the system USB configuration. The items listed are:

- Module Version: x.xxxxx.xxxxx

➔ **USB Devices Enabled**

The **USB Devices Enabled** field lists the USB devices that are enabled on the system

➔ **USB Function [Enabled]**

Use the **USB Function** BIOS option to enable or disable USB function support.

➔	**Disabled**		USB function support disabled
➔	**Enabled**	**DEFAULT**	USB function support enabled

➔ **USB 2.0 Controller [Enabled]**

Use the **USB 2.0 Controller** BIOS option to enable or disable the USB 2.0 controller

➔	**Disabled**		USB 2.0 controller disabled
➔	**Enabled**	**DEFAULT**	USB 2.0 controller enabled

➔ **Legacy USB Support [Enabled]**

Use the **Legacy USB Support** BIOS option to enable USB mouse and USB keyboard support.

Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.

➔	**Disabled**		Legacy USB support disabled

➔ **Enabled** **DEFAULT** Legacy USB support enabled

➔ **Auto** Legacy USB support disabled if no USB devices are connected

➔ **USB2.0 Controller Mode [HiSpeed]**

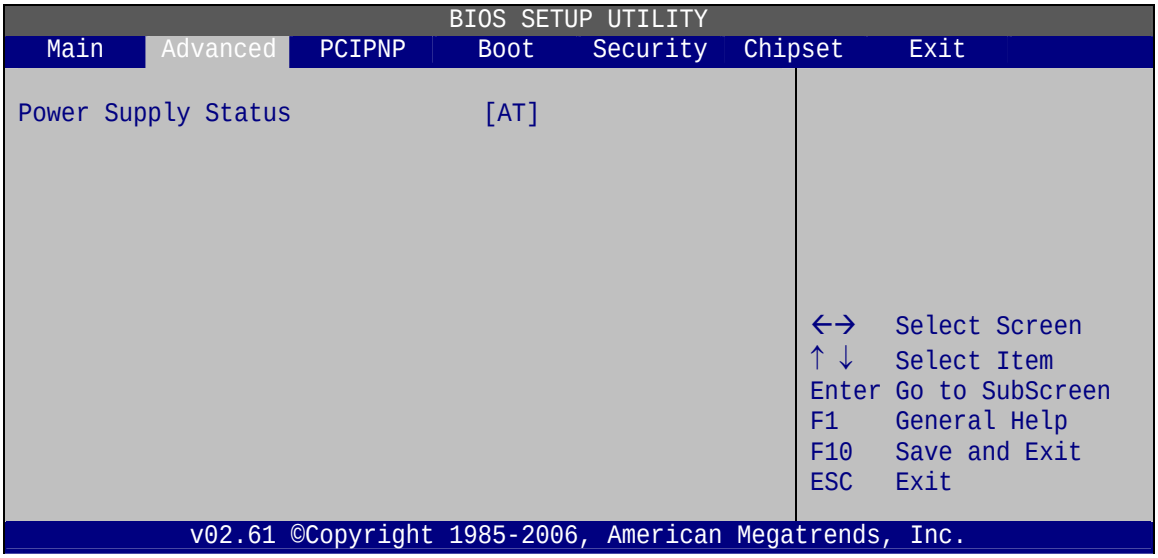
Use the **USB2.0 Controller Mode** option to set the speed of the USB2.0 controller.

➔ **FullSpeed** The controller is capable of operating at 12 Mb/s

➔ **HiSpeed** **DEFAULT** The controller is capable of operating at 480 Mb/s

6.3.7 Power Configuration

The **Power** menu (**BIOS Menu 11**) allows the advanced power management options to be configured.



BIOS Menu 12: Power Configuration

➔ **Power Supply Mode [AT]**

Use the **Power Supply Mode** BIOS option to select the power supply that is connected to the system.

➔	**AT**	**DEFAULT**	An AT power supply is connected to the system
➔	**ATX**		An ATX power supply is connected to the system

6.4 PCI/PnP

Use the **PCI/PnP** menu (**BIOS Menu 13**) to configure advanced PCI and PnP settings.

WARNING!

Setting wrong values for the BIOS selections in the PCIPnP BIOS menu may cause the system to malfunction.

```
                        BIOS SETUP UTILITY
  Main   Advanced   PCIPNP   Boot   Security   Chipset   Exit

Advanced PCI/PnP Settings                    Available: Specified IRQ
-------------------------------------------- is available to be use
WARNING: Setting wrong values in below sections the PCI/PnP devices
         may cause system to malfunction     Reserved: Specified IRQ
IRQ3                              [Reserved] is reserved for use by
IRQ4                              [Reserved] legacy ISA devices
IRQ5                              [Available]
IRQ7                              [Available]
IRQ9                              [Available]
IRQ10                             [Reserved]
IRQ11                             [Available]
IRQ14                             [Available]
IRQ15                             [Available]

DMA Channel 0                     [Available] ←→   Select Screen
DMA Channel 1                     [Available] ↑ ↓  Select Item
DMA Channel 3                     [Available] Enter Go to SubScreen
DMA Channel 5                     [Available] F1    General Help
DMA Channel 6                     [Available] F10   Save and Exit
DMA Channel 7                     [Available] ESC   Exit

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```

BIOS Menu 13: PCI/PnP Configuration

➔ **IRQ# [Available]**

Use the **IRQ#** address to specify what IRQs can be assigned to a particular peripheral device.

➔ **Available**	**DEFAULT**	The specified IRQ is available to be used by PCI/PnP devices
➔ **Reserved**		The specified IRQ is reserved for use by Legacy ISA devices

Available IRQ addresses are:

- IRQ3
- IRQ4
- IRQ5
- IRQ7
- IRQ9
- IRQ10
- IRQ 11
- IRQ 14
- IRQ 15

➔ **DMA Channel# [Available]**

Use the **DMA Channel#** option to assign a specific DMA channel to a particular PCI/PnP device.

➔ **Available**	**DEFAULT**	The specified DMA is available to be used by PCI/PnP devices
➔ **Reserved**		The specified DMA is reserved for use by Legacy ISA devices

Available DMA Channels are:

- DM Channel 0

- DM Channel 1
- DM Channel 3
- DM Channel 5
- DM Channel 6
- DM Channel 7

➔ **Reserved Memory Size [Disabled]**

Use the **Reserved Memory Size** BIOS option to specify the amount of memory that should be reserved for legacy ISA devices.

➔	**Disabled**	**DEFAULT**	No memory block reserved for legacy ISA devices
➔	**16K**		16 KB reserved for legacy ISA devices
➔	**32K**		32 KB reserved for legacy ISA devices
➔	**64K**		54 KB reserved for legacy ISA devices

6.5 Boot

Use the **Boot** menu (**BIOS Menu 14**) to configure system boot options.

```
                        BIOS SETUP UTILITY
  Main    Advanced   PCIPNP    Boot    Security   Chipset    Exit

Boot Settings                                  Configure settings
_____________________________________________  during system boot.
> Boot Settings Configuration

                                               ←→   Select Screen
                                               ↑ ↓  Select Item
                                               Enter Go to SubScreen
                                               F1   General Help
                                               F10  Save and Exit
                                               ESC  Exit

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```
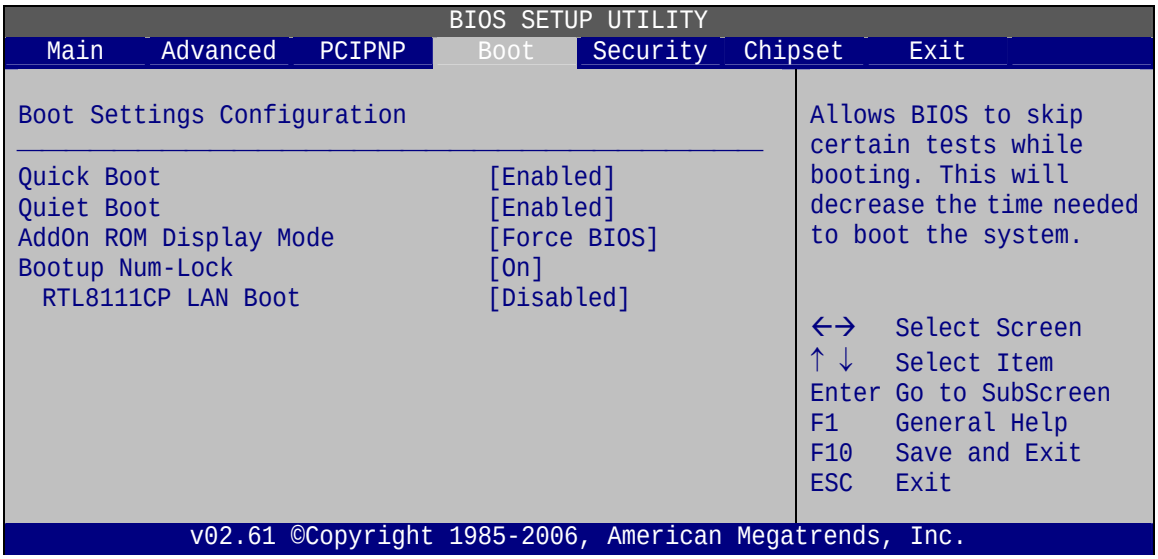

BIOS Menu 14: Boot

6.5.1 Boot Settings Configuration

Use the **Boot Settings Configuration** menu (**BIOS Menu 15**) to configure advanced system boot options.


BIOS SETUP UTILITY
Main Advanced PCIPNP Boot Security Chipset Exit
Boot Settings Configuration
Quick Boot [Enabled]
Quiet Boot [Enabled]
AddOn ROM Display Mode [Force BIOS]
Bootup Num-Lock [On]
RTL8111CP LAN Boot [Disabled]
Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.
←→ Select Screen
↑ ↓ Select Item
Enter Go to SubScreen
F1 General Help
F10 Save and Exit
ESC Exit
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BIOS Menu 15: Boot Settings Configuration

➔ **Quick Boot [Enabled]**

Use the **Quick Boot** BIOS option to make the computer speed up the boot process.

➔ **Disabled** No POST procedures are skipped

➔ **Enabled** **DEFAULT** Some POST procedures are skipped to decrease the system boot time

➔ **Quiet Boot [Enabled]**

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

➔ **Disabled** Normal POST messages displayed

➔ **Enabled** **DEFAULT** OEM Logo displayed instead of POST messages

➔ **AddOn ROM Display Mode [Force BIOS]**

Use the **AddOn ROM Display Mode** option to allow add-on ROM (read-only memory) messages to be displayed.

➔ **Force BIOS**	**DEFAULT**	The system forces third party BIOS to display during system boot.
➔ **Keep Current**		The system displays normal information during system boot.

➔ **Bootup Num-Lock [On]**

Use the **Bootup Num-Lock** BIOS option to specify if the number lock setting must be modified during boot up.

➔ **Off**		Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.
➔ **On**	**DEFAULT**	Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.

➔ **RTL8111CP LAN Boot [Disabled]**

Use the **RTL8111CP LAN Boot** option to enable the system to be booted from a remote system.

➔ **Enabled** Can be booted from a remote system through the LAN

➔ **Disabled** **DEFAULT** Cannot be booted from a remote system through the LAN

6.6 Security

Use the **Security** menu (**BIOS Menu 16**) to set system and user passwords.

```
                        BIOS SETUP UTILITY
  Main    Advanced   PCIPNP    Boot    Security   Chipset    Exit

Security Settings
_____________________________________________________________

Supervisor Password    :Not Installed
User Password          :Not Installed

Change Supervisor Password
Change User Password

                                          ←→   Select Screen
                                          ↑ ↓  Select Item
                                          Enter Go to SubScreen
                                          F1    General Help
                                          F10   Save and Exit
                                          ESC   Exit

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```

BIOS Menu 16: Security

➔ **Change Supervisor Password**

Use the **Change Supervisor Password** to set or change a supervisor password. The default for this option is **Not Installed**. If a supervisor password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change Supervisor Password**.

➔ **Change User Password**

Use the **Change User Password** to set or change a user password. The default for this option is **Not Installed**. If a user password must be installed, select this field and enter the

password. After the password has been added, **Install** appears next to **Change User Password**.

6.7 Chipset

Use the **Chipset** menu (**BIOS Menu 17**) to access the Northbridge and Southbridge configuration menus

WARNING!

Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.

```
                        BIOS SETUP UTILITY
  Main    Advanced   PCIPNP    Boot    Security   Chipset    Exit

Advanced Chipset Settings
_____________________________________________________________

WARNING: Setting wrong values in below section
         may cause system to malfunction.

> Northbridge Configuration
> Southbridge Configuration

                                                  ←→   Select Screen
                                                  ↑ ↓   Select Item
                                                  Enter Go to SubScreen
                                                  F1    General Help
                                                  F10   Save and Exit
                                                  ESC   Exit

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```
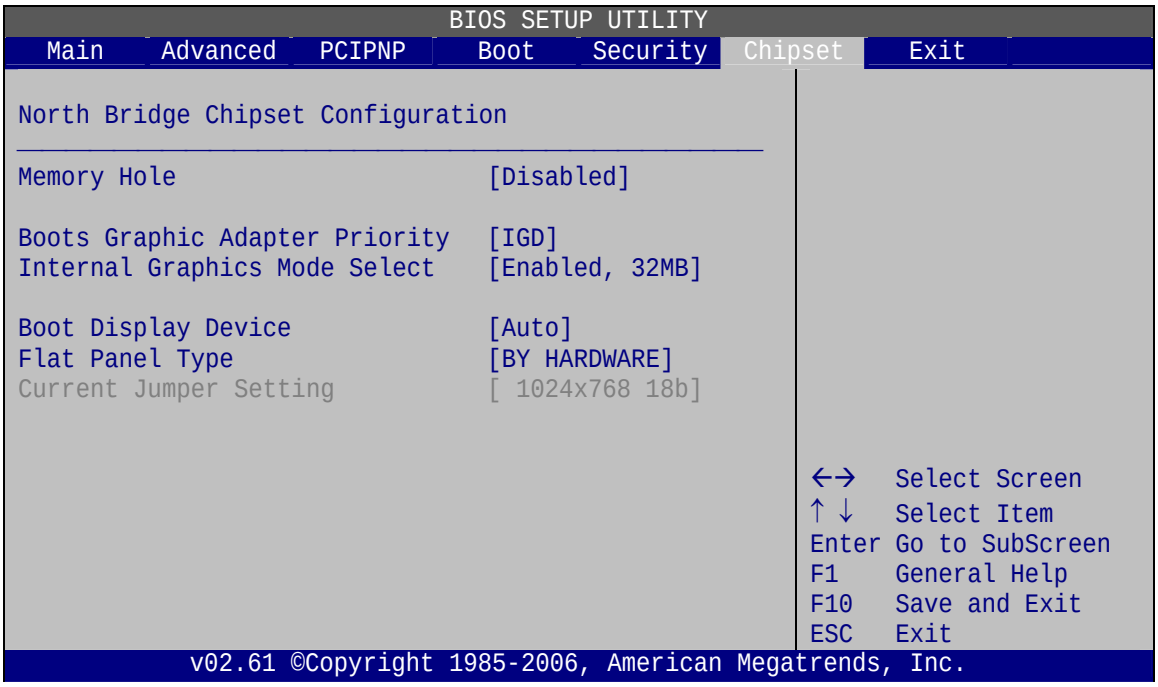

BIOS Menu 17: Chipset

6.7.1 Northbridge Configuration

Use the **Northbridge Chipset Configuration** menu (**BIOS Menu 18**) to configure the Northbridge chipset.


BIOS SETUP UTILITY
Main Advanced PCIPNP Boot Security Chipset Exit
North Bridge Chipset Configuration
Memory Hole [Disabled]
Boots Graphic Adapter Priority [IGD]
Internal Graphics Mode Select [Enabled, 32MB]
Boot Display Device [Auto]
Flat Panel Type [BY HARDWARE]
Current Jumper Setting [1024x768 18b]
←→ Select Screen
↑ ↓ Select Item
Enter Go to SubScreen
F1 General Help
F10 Save and Exit
ESC Exit
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BIOS Menu 18:Northbridge Chipset Configuration

➔ **Memory Hole [Disabled]**

Use the **Memory Hole** option to reserve memory space between 15 MB and 16 MB for ISA expansion cards that require a specified area of memory to work properly. If an older ISA expansion card is used, please refer to the documentation that came with the card to see if it is necessary to reserve the space.

➔	**Disabled**	**DEFAULT**	Memory is not reserved for ISA expansion cards
➔	**15 MB** – **16 MB**		Between 15 MB and 16 MB of memory is reserved for ISA expansion cards

➔ **Boots Graphics Adapter Priority [IGD]**

Use the **Boots Graphics Adapter Priority** option to select the graphics controller used as the primary boot device. Select either an integrated graphics controller (IGD) or a combination of PCI graphics controller, a PCI express (PEG) controller or an IGD. Configuration options are listed below:

- IGD **DEFAULT**
- PCI/IGD

➔ **Internal Graphics Mode Select [Enabled, 32MB]**

Use the **Internal Graphic Mode Select** option to specify the amount of system memory that can be used by the Internal graphics device.

➔ **Disabled**		
➔ **Enabled, 32MB**	**DEFAULT**	32 MB of memory used by internal graphics device
➔ **Enabled, 64MB**		64 MB of memory used by internal graphics device
➔ **Enabled, 128MB**		128 MB of memory used by internal graphics device

➔ **Boot Display Device [Auto]**

Use the **Boot Display Device** BIOS feature to determine what displays are used. Dual display functionality is enabled here. Dual display configuration options are listed below:

- Auto **DEFAULT**
- CRT
- LVDS

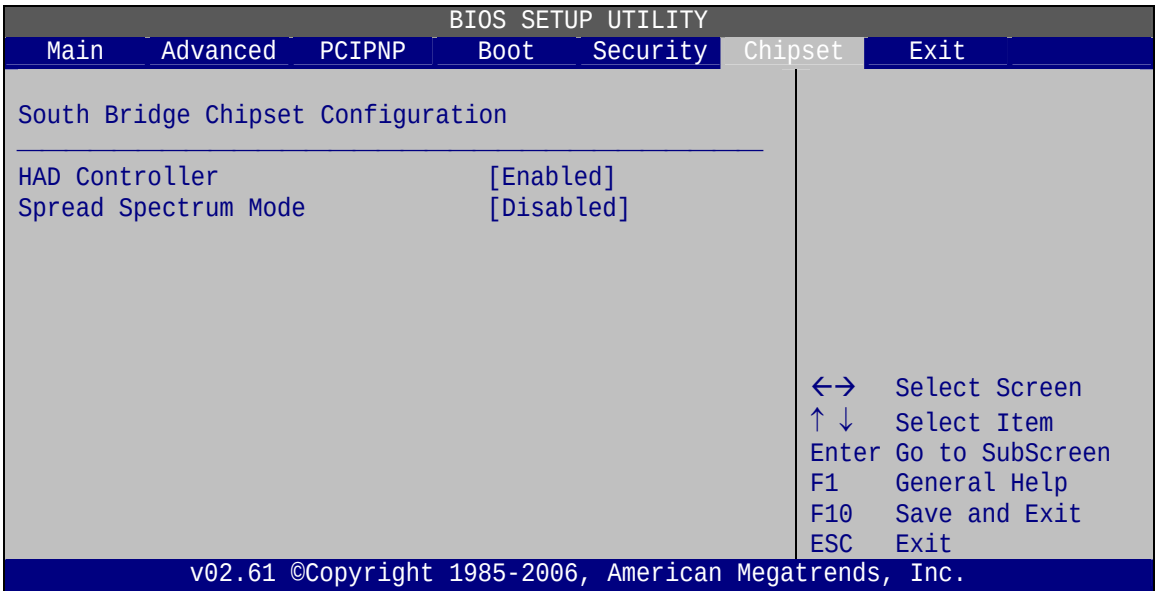
➔ **Flat Panel Type [BY HARDWARE]**

Use the **Flat Panel Type** to determine the LCD panel resolution. Configuration options are listed below:

- 640 x 480 18bit
- 800 x 600 18bit
- 1024 x 768 18bit
- 1024 x 768 24bit
- 1280 x 1024 48bit
- 1600 x 1200 48bit
- BY HARDWARE **DEFAULT**

6.7.2 Southbridge Configuration

The **Southbridge Configuration** menu (**BIOS Menu 19**) the Southbridge chipset to be configured.



BIOS Menu 19:Southbridge Chipset Configuration

➔ **HDA Controller [Enabled]**

Use the **HDA Controller** option to enable or disable the High Definition Audio controller.

➔ **Enabled** **DEFAULT** The onboard HD audio controller is enabled

➔ **Disabled** The onboard HD audio controller is disabled

➔ **Spread Spectrum Mode [Disabled]**

Use the **Spread Spectrum Mode** option to reduce the EMI. Excess EMI is generated when the system clock generator pulses have extreme values. Spreading the pulse spectrum modulates changes in the extreme values from spikes to flat curves, thus reducing the EMI. This benefit may in some cases be outweighed by problems with timing-critical devices, such as a clock-sensitive SCSI device.

➔	**Disabled**	**DEFAULT**	EMI not reduced
➔	**Enabled**		EMI reduced

6.8 Exit

Use the **Exit** menu (**BIOS Menu 20**) to load default BIOS values, optimal failsafe values and to save configuration changes.

```
                        BIOS SETUP UTILITY
  Main   Advanced   PCIPNP   Boot   Security   Chipset   Exit

Exit Options                                  Exit system setup after
------------------------------------------    saving the changes.
Save Changes and Exit
Discard Changes and Exit                      F10 key can be used for
Discard Changes                               this operation

Load Optimal Defaults
Load Failsafe Defaults                        ←→   Select Screen
                                              ↑ ↓   Select Item
                                              Enter Go to SubScreen
                                              F1    General Help
                                              F10   Save and Exit
                                              ESC   Exit

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```

BIOS Menu 20:Exit

➔ **Save Changes and Exit**

Use the **Save Changes and Exit** option to save the changes made to the BIOS options and to exit the BIOS configuration setup program.

➔ **Discard Changes and Exit**

Use the **Discard Changes and Exit** option to exit the BIOS configuration setup program without saving the changes made to the system.

➔ **Discard Changes**

Use the **Discard Changes** option to discard the changes and remain in the BIOS configuration setup program.

➔ **Load Optimal Defaults**

Use the **Load Optimal Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F9 key can be used for this operation.**

➔ **Load Failsafe Defaults**

Use the **Load Failsafe Defaults** option to load failsafe default values for each of the parameters on the Setup menus. **F8 key can be used for this operation.**

Chapter

7

Battery Monitoring and Remote Control

7.1 Introduction

The IEI AUPS Battery Status Monitor application detects the information of the smart battery and monitors the battery status. It is recommended to execute this AUPS application in Windows XP SP2 environment.

7.2 Monitoring DC Power and Smart Battery

7.2.1 Application Installation

Follow the steps below to install the AUPS Battery Status Monitor application.

Step 1: Insert the driver CD into the system. Open the **x:\AUPS\Aups_setup_v1.9** directory. Double click the **Setup.exe** icon.

Step 2: A welcome screen appears (**Figure 7-1**). To continue the installation process click **NEXT**.

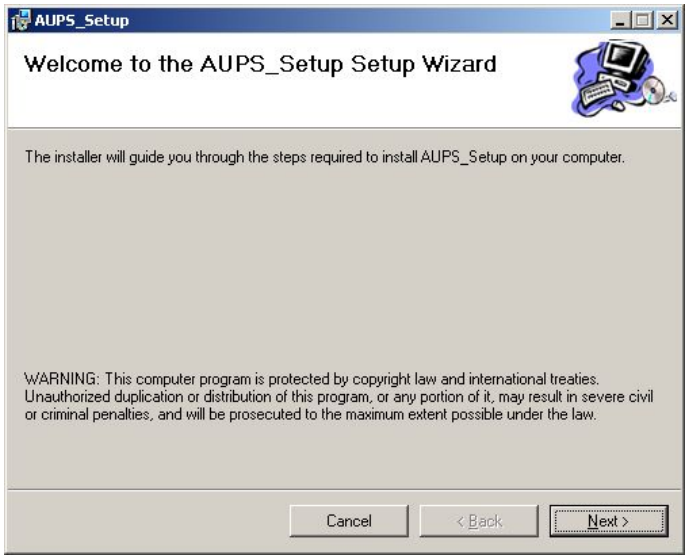
AUPS_Setup
Welcome to the AUPS_Setup Setup Wizard
The installer will guide you through the steps required to install AUPS_Setup on your computer.
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Cancel
< Back
Next >

Figure 7-1: Welcome Screen

Step 3: The Select Installation Folder window appears (**Figure 7-2**). Select a folder to install the application.

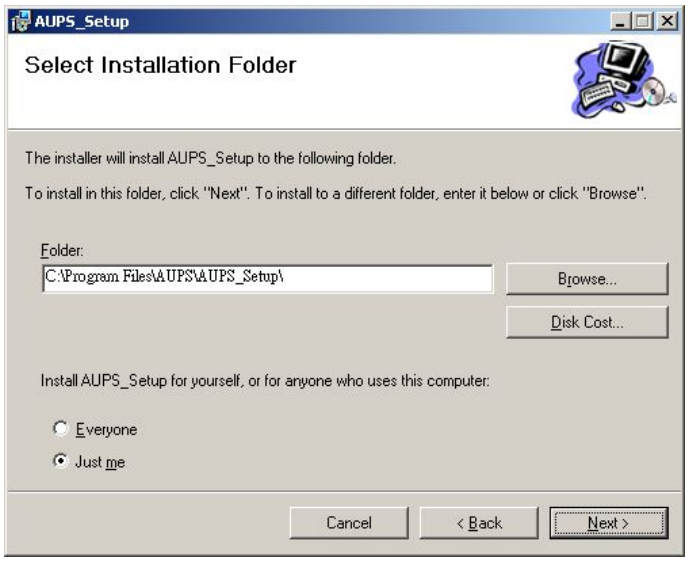
AUPS_Setup
Select Installation Folder
The installer will install AUPS_Setup to the following folder.
To install in this folder, click "Next". To install to a different folder, enter it below or click "Browse".
Folder:
C:\Program Files\AUPS\AUPS_Setup\
Browse...
Disk Cost...
Install AUPS_Setup for yourself, or for anyone who uses this computer:
Everyone
Just me
Cancel
< Back
Next >

Figure 7-2: Select Installation Folder

Step 4: Click **NEXT** and the Installshield Wizard is ready to install the program (**Figure 7-3**).

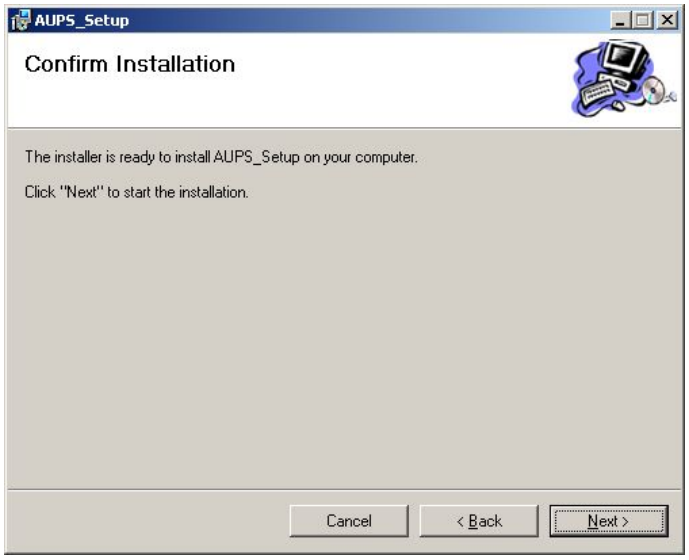
AUPS_Setup
Confirm Installation
The installer is ready to install AUPS_Setup on your computer.
Click "Next" to start the installation.
Cancel
< Back
Next >

Figure 7-3: Ready to Install the Program

Step 5: Click **NEXT** to continue. The Installing AUPS_Setup screen appears as the program is installed (**Figure 7-4**).

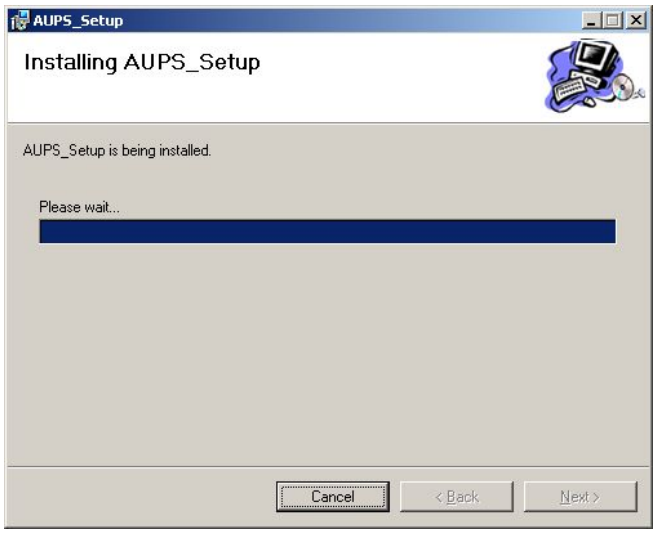

Figure 7-4: Installing AUPS

Step 6: The Installation Complete window appears (**Figure 7-5**). Click **Close** to exit.

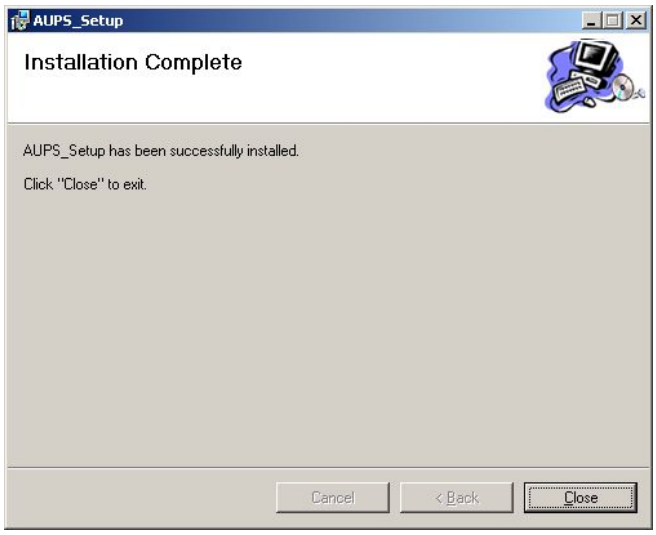

Figure 7-5: Installation Complete

Step 7: To launch the application, double click the shortcut (**Figure 7-6**) on the desktop

Figure 7-6: AUPS Battery Status Monitor Application

7.2.2 Status Information

The IEI AUPS Battery Status Monitor application shows the DC power status and battery status (**Figure 7-7**). The following sections describe the status information in details.

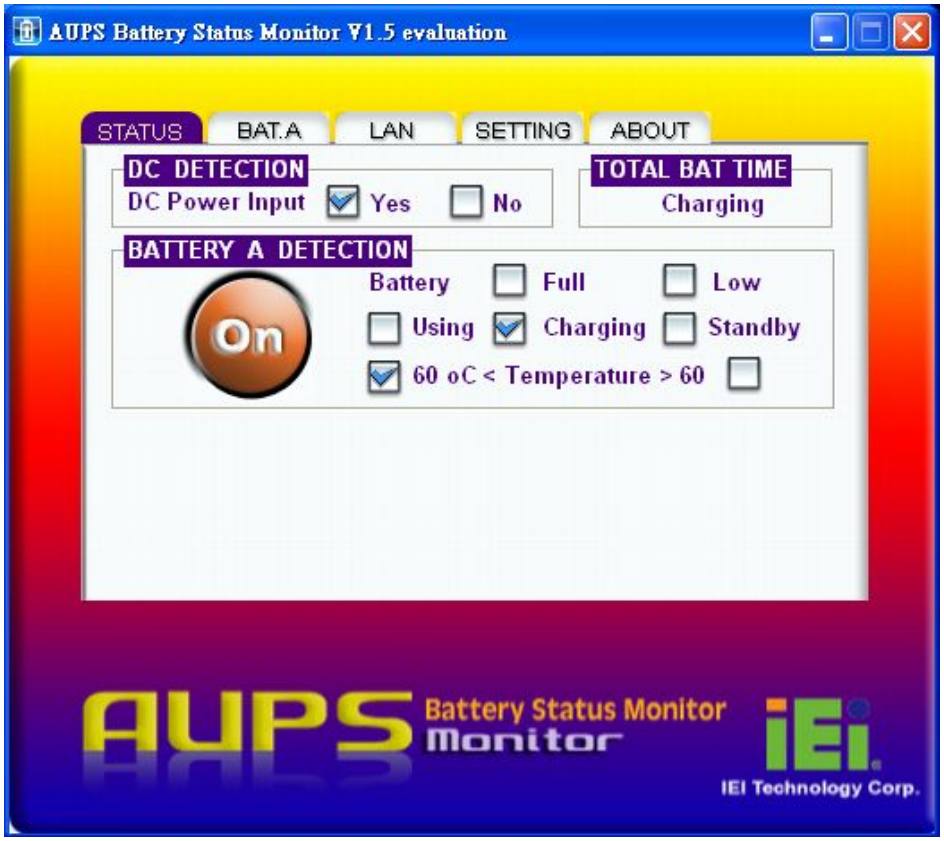

Figure 7-7: Status Information

7.2.2.1 DC Detection

When the DC power is connected to the AUPS series power module, the AUPS Battery Status Monitor detects it and shows in the screen as **Figure 7-8**.

Figure 7-8: DC Detection

7.2.2.2 Battery Detection

When the smart battery is connected to the AUPS series power module, the AUPS Battery Status Monitor detects it and shows in the screen as **Figure 7-9**. Two batteries can be connected to the AUPS series power module at the same time. The second battery information is shown in the **Battery A Detection** section if connected.

Figure 7-9: Battery Detection

	The battery is connected to the AUPS series.
Off	**The battery is not connected to the AUPS series.**
Full	**The battery is fully charged.**
Low	**The battery is low.**
Using	**The battery is being used.**
Charging	**The battery is being charged.**
Standby	**The battery is fully charged and ready to be used anytime.**
>60 C	**The battery temperature is above 60°C.**
<60 C	**The battery temperature is below 60°C.**

7.2.2.3 Total Battery Time

The total battery time is shown in the top right corner (**Figure 7-10**) of the status screen to indicate the total battery remaining time.

Figure 7-10: Total Battery Time

7.2.3 Battery Information

Click on the **BAT. A** tab to view the information of battery. The listed information includes battery type, capacity, output voltage, temperature, charging rate, discharging rate and battery status (**Figure 7-11**). The values listed are updated per second.

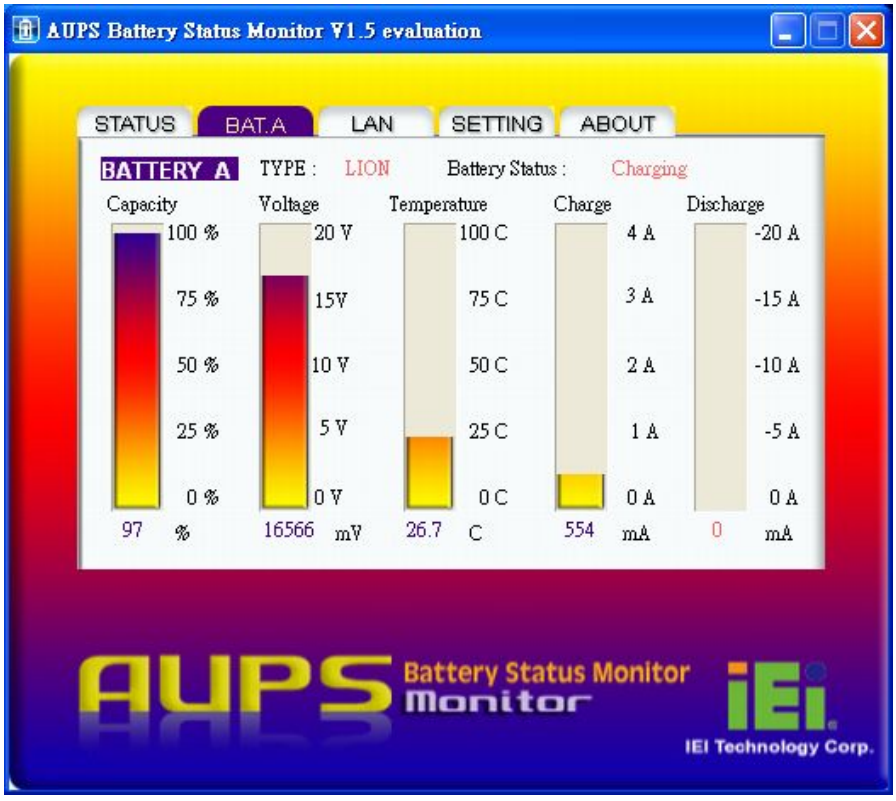

Figure 7-11: Battery Information

7.2.4 LAN Setting

The LAN Setting page is where to configure the Remote LAN settings for power on/off remote control and battery monitoring. To save the modified parameters of this page, click the Save Config button. To load the default settings, click Load Default button.

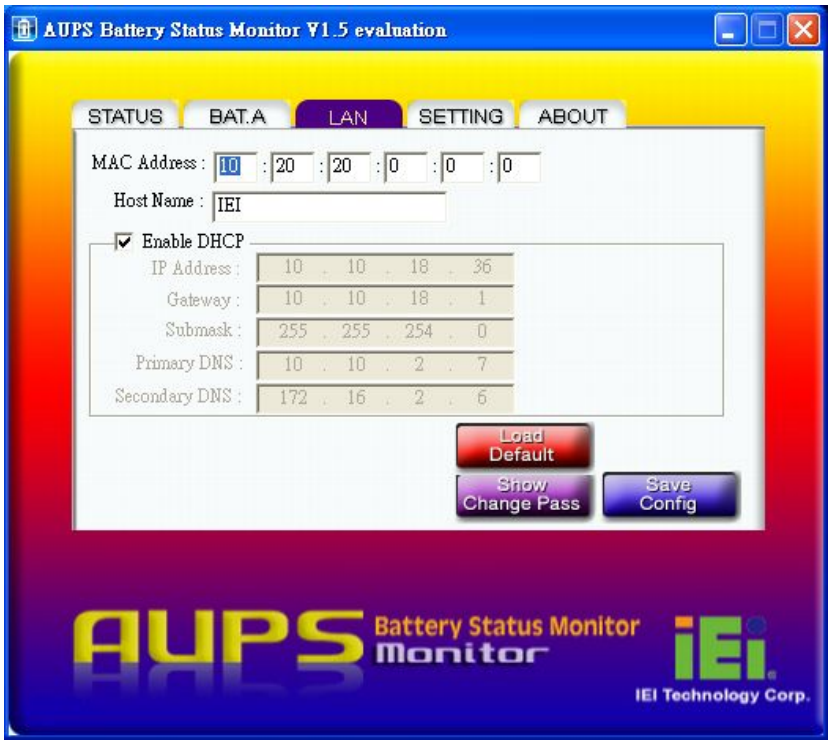
AUPS Battery Status Monitor V1.5 evaluation
STATUS
BAT.A
LAN
SETTING
ABOUT
MAC Address : 10 : 20 : 20 : 0 : 0 : 0
Host Name : IEI
Enable DHCP
IP Address : 10 . 10 . 18 . 36
Gateway : 10 . 10 . 18 . 1
Submask : 255 . 255 . 254 . 0
Primary DNS : 10 . 10 . 2 . 7
Secondary DNS : 172 . 16 . 2 . 6
Load Default
Show Change Pass
Save Config
AUPS
Battery Status Monitor
Monitor
IEI Technology Corp.

Figure 7-12: LAN Setting

The LAN Setting page can also setup the user name and password for remote monitoring. To change the user name and password, click Hide Change Pass button. Enter the new user name and password (**Figure 7-13**). Click Save Config button to save the settings. The default user name and password for the LAN setting page are:

- User name: admin
- Password: IEI

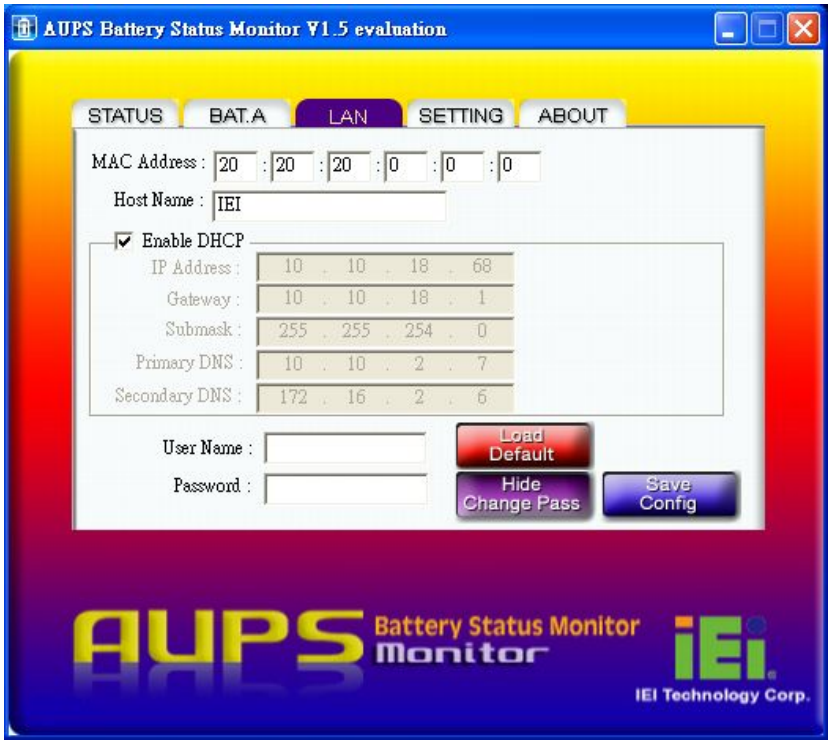
AUPS Battery Status Monitor V1.5 evaluation
STATUS
BAT.A
LAN
SETTING
ABOUT
MAC Address : 20 : 20 : 20 : 0 : 0 : 0
Host Name : IEI
Enable DHCP
IP Address : 10 . 10 . 18 . 68
Gateway : 10 . 10 . 18 . 1
Submask : 255 . 255 . 254 . 0
Primary DNS : 10 . 10 . 2 . 7
Secondary DNS : 172 . 16 . 2 . 6
User Name :
Password :
Load Default
Hide Change Pass
Save Config
AUPS
Battery Status Monitor
Monitor
IEI Technology Corp.

Figure 7-13: LAN Setting – Change Password

7.2.5 Setting

Click on the SETTING tab to select the COM port, enable/disable buzzer, LAN and DC output (**Figure 7-14**).

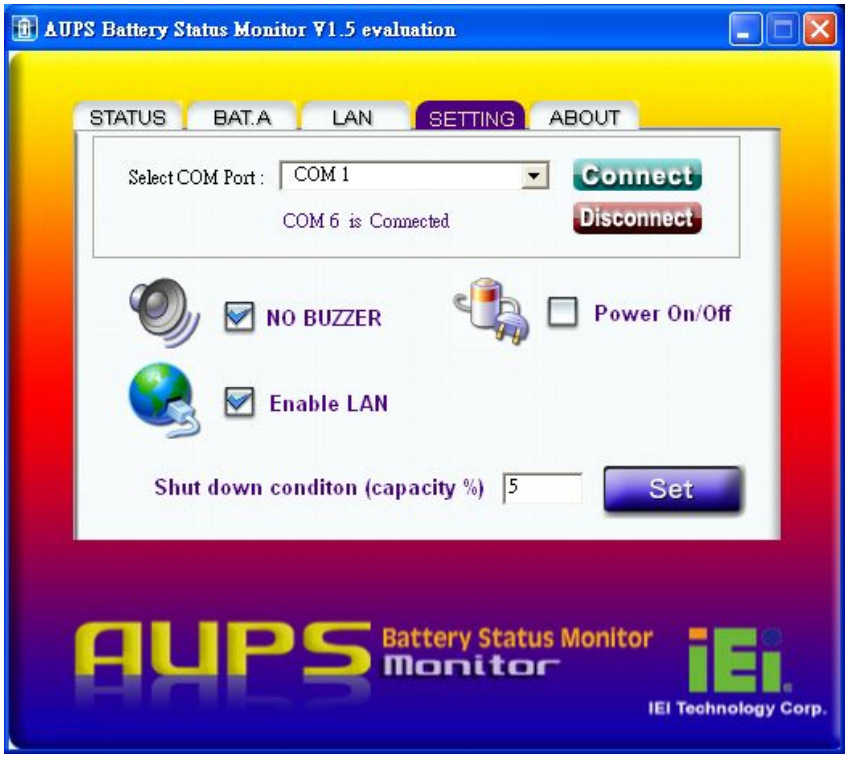

Figure 7-14: Application Setting

When the AUPS Battery Status Monitor application starts up, it automatically scans all COM port (COM1~COM16) and shows the valid COM port. **Figure 7-15** shows the AUPS application is communicating with UPC-12A/GM45 through COM 6. To change the serial port to communicate, select a proper port number from the list and click Connect. Before changing, please make sure the selected serial port is not used by other devices.

Figure 7-15: COM Port Status

Other functions can be set in the SETTING tab include

	Check to disable the buzzer that warns when the system is switching to use battery power.
	Check to enable the LAN for remote monitoring function.
	Check to enable the remote computer to turn the system power on or off. (This function is not available at this stage)
Set the battery capacity parameter for the system to shut down automatically. In this case, the system will shut down automatically when the battery capacity is below 5%.	

7.3 Remote Control and Monitoring

The UPC-12A/GM45 can be controlled (power on/off) and monitored the battery status through a remote computer located in the same subnet with the UPC-12A/GM45. To control and monitor the UPC-12A/GM45 remotely, follow the steps below.

Step 1: Connect the RJ-45 remote LAN connector on the bottom panel of the UPC-12A/GM45 to a local area network connector. Or connect the RJ-45 to COM port cable to the “Remote RS-232 connector” and connect the DB-9 connector to the systems. (**Figure 7-16**)

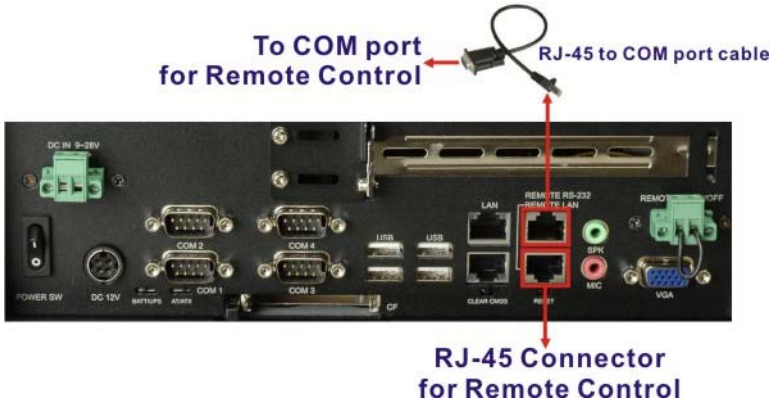

Figure 7-16: RJ-45 Remote LAN Connector

Step 2: In a remote computer, install the IEI REMOTE AP. Double click the setup.exe file in the **x:\AUPS\AUPS REMOTE AP** directory. Follow the steps to install the IEI REMOTE AP. After installation, launch the AP. If there is a problem to launch the tool, execute the dotnetfxRedist20.exe first (located in the same directory of the driver CD).

Step 3: The IEI REMOTE AP tool appears (**Figure 7-17**). All the UPC-12A/GM45 panel PCs in the same subnet with this remote computer are shown in the list on the right. Click the function buttons on the left to control the UPC-12A/GM45.

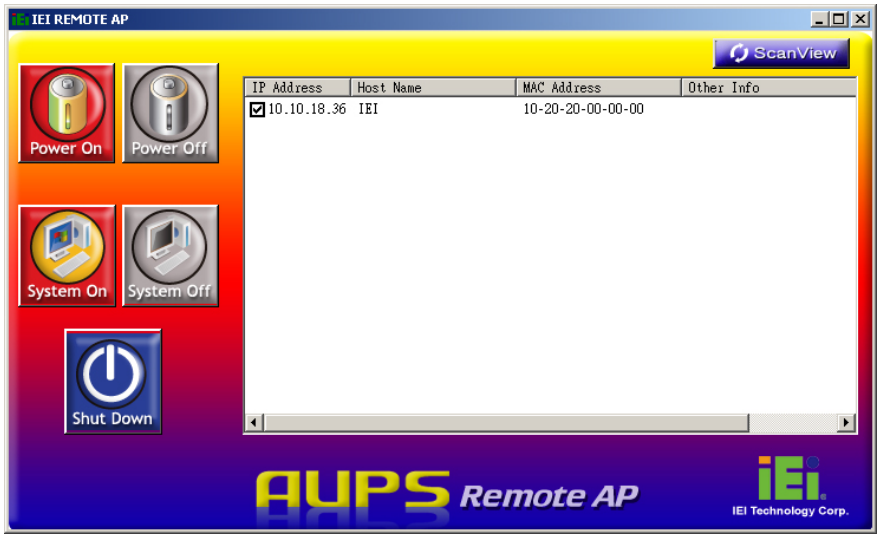

Figure 7-17: IEI REMOTE AP

Step 4: To access the web interface for advanced monitoring and functions, double click the IP address of the connected UPC-12A/GM45 (**Figure 7-18**).

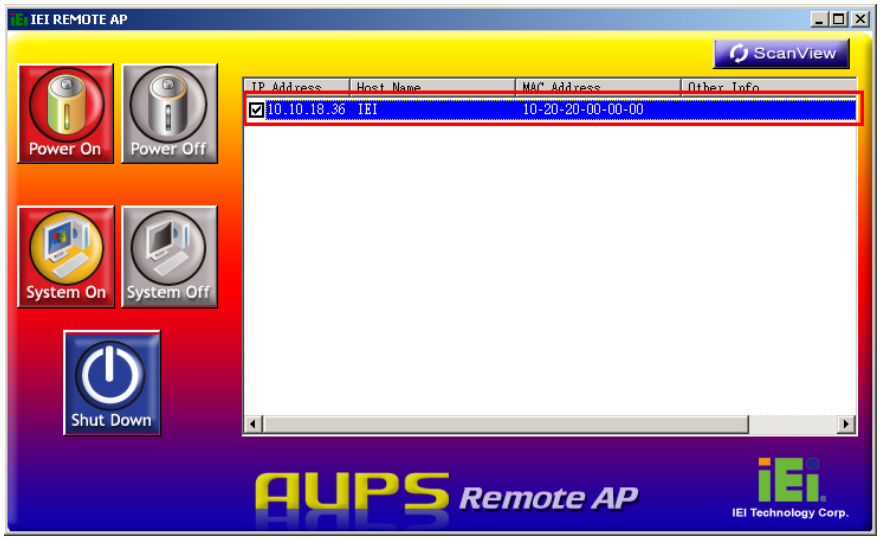

Figure 7-18: IEI REMOTE AP – IP Address

Step 5: **Figure 7-19** shows in a web browser.

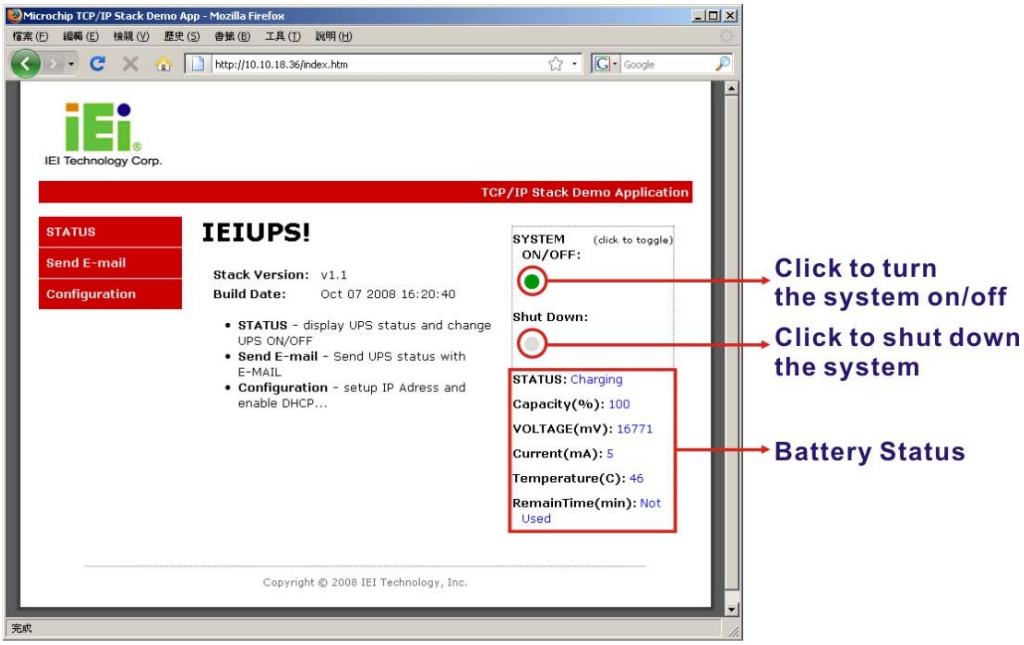

Figure 7-19: Remote Management Web Interface - Status

Step 6: To send an email to an administrator through the SMTP server, click Send E-mail button on the left. Fill out the information as indicated in **Figure 7-20.** Click the **Send Message** button to send the email.

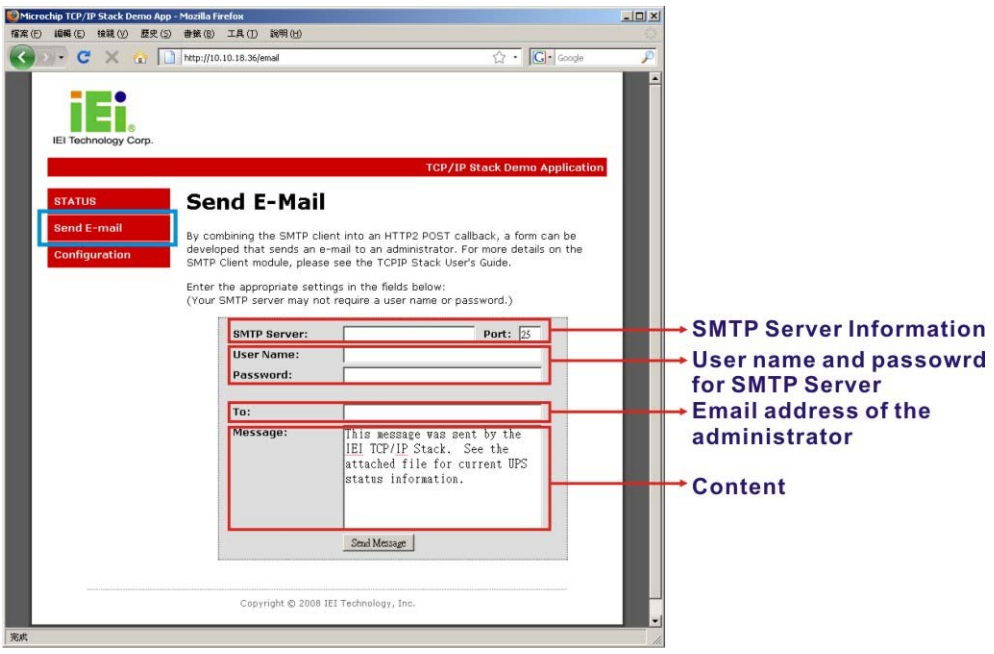
Microchip TCP/IP Stack Demo App - Mozilla Firefox
http://10.10.18.36/email
IEI Technology Corp.
TCP/IP Stack Demo Application
STATUS
Send E-mail
Configuration
Send E-Mail
By combining the SMTP client into an HTTP2 POST callback, a form can be developed that sends an e-mail to an administrator. For more details on the SMTP Client module, please see the TCPIP Stack User's Guide.
Enter the appropriate settings in the fields below:
(Your SMTP server may not require a user name or password.)
SMTP Server:
Port: 25
User Name:
Password:
To:
Message:
This message was sent by the IEI TCP/IP Stack. See the attached file for current UPS status information.
Send Message
Copyright © 2008 IEI Technology, Inc.
SMTP Server Information
User name and passowrd for SMTP Server
Email address of the administrator
Content

Figure 7-20: Remote Management Web Interface - Send Email

Step 7: To configure the UPC-12A/GM45 network setting, click the **Configuration** button on the left.

Step 8: A window prompts for the user name and password. The default user name and password for the LAN setting page are:

- User name: admin
- Password: IEI

If the user name and password has been change as described in **Section 7.2.4**, enter the new user name and password.

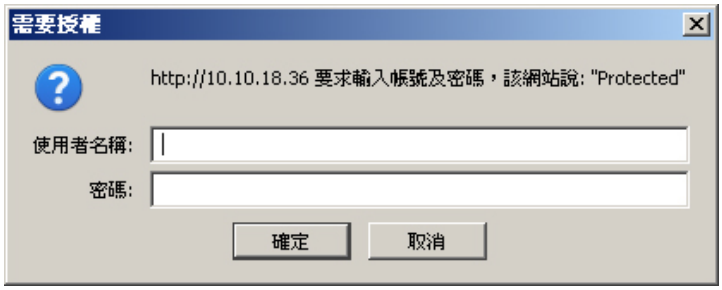

Figure 7-21: Enter User Name and Password

Step 9: The Board Configuration window appears. Configure the network settings and click the **Save Config** button. Incorrect settings may cause the board to lose network connectivity. Recovery options are provided on the next page.

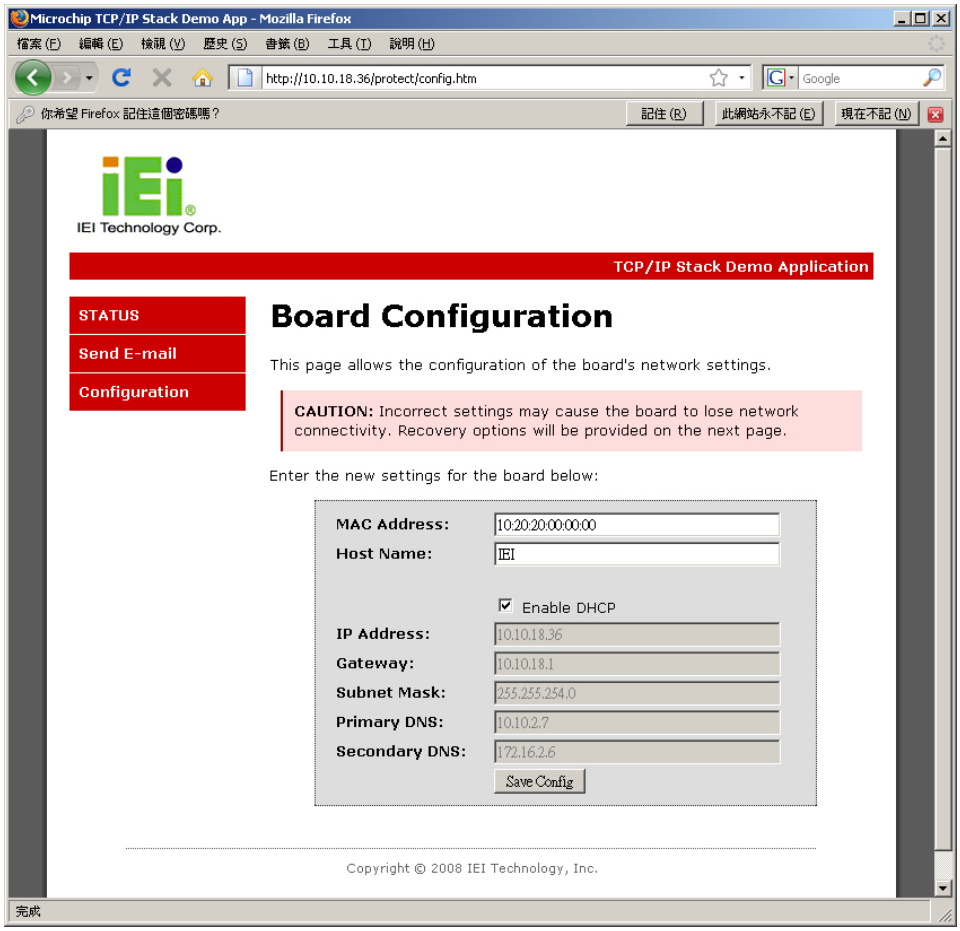
Microchip TCP/IP Stack Demo App - Mozilla Firefox
http://10.10.18.36/protect/config.htm
IEI Technology Corp.
TCP/IP Stack Demo Application
STATUS
Send E-mail
Configuration
Board Configuration
This page allows the configuration of the board's network settings.
CAUTION: Incorrect settings may cause the board to lose network connectivity. Recovery options will be provided on the next page.
Enter the new settings for the board below:
MAC Address: 10:20:20:00:00:00
Host Name: IEI
Enable DHCP
IP Address: 10.10.18.36
Gateway: 10.10.18.1
Subnet Mask: 255.255.254.0
Primary DNS: 10.10.2.7
Secondary DNS: 172.16.2.6
Save Config
Copyright © 2008 IEI Technology, Inc.

Figure 7-22: Board Configuration

Appendix

A

External Connector Pinouts

A.1 Introduction

Pin out signal definitions for the external connectors are provided in this appendix.

A.2 RJ-45 GbE Connector

The UPC-12A/GM45 has two RJ-45 GbE connectors.

PIN NO.	DESCRIPTION
1	TX_D1+
2	TX_D1-
3	RX_D2+
4	BI_D3+
5	BI_D3-
6	RX_D2-
7	BI_D4+
8	BI_D4-

RJ-45 GbE Connector Pinouts

A.3 RJ-45 for MCU UART Connector

The UPC-12A/GM45 has one RJ-45 MCU's UART connector.

PIN NO.	DESCRIPTION
1	NC
2	NC
3	CTS
4	TX
5	RTS
6	RX
7	NC
8	NC

RJ-45 MCU's UART Connector Pinouts

A.4 RJ-45 for MCU LAN Connector

The UPC-12A/GM45 has one RJ-45 MCU's LAN connector.

PIN NO.	DESCRIPTION
1	uP_LAN_TX+
2	uP_LAN_TX-
3	uP_LAN_RX+
4	GND
5	GND
6	uP_LAN_RX-
7	GND
8	GND

RJ-45 MCU's LAN Connector Pinouts

A.5 Remote Power Button Connector

The 2-pin remote power button terminal block connects to an external power button.

PIN NO.	DESCRIPTION
1	EX_PWRBTN
2	GND

External Power Button Connector Pinouts

A.6 VGA Connector

The UPC-12A/GM45 has a single 15-pin female connector for connectivity to standard display devices.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	VCC (+5V)	10	GND
11	NC	12	DDC DAT
13	HSYNC	14	VSYNC
15	DDCCLK		

VGA Connector Pinouts

Appendix

B

Safety Precautions

WARNING:

The precautions outlined in this chapter should be strictly followed. Failure to follow these precautions may result in permanent damage to the EP series.

B.1 Safety Precautions

Please follow the safety precautions outlined in the sections that follow:

B.1.1 General Safety Precautions

Please ensure the following safety precautions are adhered to at all times.

- ***Follow the electrostatic precautions*** outlined below whenever the EP series is opened.
- ***Make sure the power is turned off and the power cord is disconnected*** whenever the EP series is being installed, moved or modified.
- ***Do not apply voltage levels that exceed the specified voltage range***. Doing so may cause fire and/or an electrical shock.
- ***Electric shocks can occur*** if the EP series chassis is opened when the EP series is running.
- ***Do not drop or insert any objects*** into the ventilation openings of the EP series.
- ***If considerable amounts of dust, water, or fluids enter the EP series***, turn off the power supply immediately, unplug the power cord, and contact the EP series vendor.
- **DO NOT**:
  - Drop the EP series against a hard surface.
  - Strike or exert excessive force onto the LCD panel.
  - Touch any of the LCD panels with a sharp object
  - In a site where the ambient temperature exceeds the rated temperature

B.1.2 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the EP series may result in permanent damage to the EP series and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the EP series. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the EP series is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: Wearing a simple anti-static wristband can help to prevent ESD from damaging any electrical component.
- ***Self-grounding***: Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: When configuring or working with an electrical component, place it on an antic-static pad. This reduces the possibility of ESD damage.
- ***Only handle the edges of the electrical component***: When handling the electrical component, hold the electrical component by its edges.

B.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the EP series, please follow the guidelines below.

B.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the EP series, please read the details below.

- Except for the LCD panel, never spray or squirt liquids directly onto any other components. To clean the LCD panel, gently wipe it with a piece of soft dry cloth or a slightly moistened cloth.

- The interior of the EP series does not require cleaning. Keep fluids away from the EP series interior.
- Be cautious of all small removable components when vacuuming the EP series.
- Turn the EP series off before cleaning the EP series.
- Never drop any objects or liquids through the openings of the EP series.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the EP series.
- Avoid eating, drinking and smoking within vicinity of the EP series.

B.2.2 Cleaning Tools

Some components in the EP series may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use when cleaning the EP series.

- ***Cloth*** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the EP series.
- ***Water or rubbing alcohol*** – A cloth moistened with water or rubbing alcohol can be used to clean the EP series.
- ***Using solvents*** – The use of solvents is not recommended when cleaning the EP series as they may damage the plastic parts.
- ***Vacuum cleaner*** – Using a vacuum specifically designed for computers is one of the best methods of cleaning the EP series. Dust and dirt can restrict the airflow in the EP series and cause its circuitry to corrode.
- ***Cotton swabs*** - Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
- ***Foam swabs*** - Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Appendix

C

BIOS Configuration Options

C.1 BIOS Configuration Options

Below is a list of BIOS configuration options described in **Chapter 6**.

System Overview **71**
SATA#1 Configuration [Compatible] **74**
Configure SATA as [IDE] **75**
IDE Master and IDE Slave **75**
Auto-Detected Drive Parameters **76**
Type [Auto] **77**
LBA/Large Mode [Auto] **78**
Block (Multi Sector Transfer) [Auto] **78**
PIO Mode [Auto] **78**
DMA Mode [Auto] **79**
S.M.A.R.T [Auto] **80**
32Bit Data Transfer [Enabled] **80**
Serial Port1 Address [3F8/IRQ4] **81**
Serial Port2 Address [2F8/IRQ3] **82**
Serial Port3 Address [3E8] **82**
Serial Port3 IRQ [10] **82**
Serial Port4 Address [2E8] **82**
Serial Port4 IRQ [10] **83**
Select RS232 or RS422/RS485 [BY HARDWARE] **83**
AHCI Port n [Not Detected] **84**
SATA Port n [Auto] **85**
S.M.A.R.T [Enabled] **85**
Remote Access [Disabled] **86**
Serial Port Number [COM1] **86**
Base Address, IRQ [3F8h,4] **87**
Serial Port Mode [115200 8,n,1] **87**
Redirection After BIOS POST [Always] **87**
Terminal Type [ANSI] **88**

USB Configuration.....89
USB Devices Enabled.....89
USB Function [Enabled].....89
USB 2.0 Controller [Enabled].....89
Legacy USB Support [Enabled].....89
USB2.0 Controller Mode [HiSpeed].....90
Power Supply Mode [AT].....90
IRQ# [Available].....92
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Quiet Boot [Enabled].....94
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Bootup Num-Lock [On].....95
RTL8111CP LAN Boot [Disabled].....95
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Change User Password.....96
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Boots Graphics Adapter Priority [IGD].....99
Internal Graphics Mode Select [Enabled, 32MB].....99
Boot Display Device [Auto].....99
Flat Panel Type [BY HARDWARE].....99
HDA Controller [Enabled].....100
Spread Spectrum Mode [Disabled].....101
Save Changes and Exit.....101
Discard Changes and Exit.....102
Discard Changes.....102
Load Optimal Defaults.....102
Load Failsafe Defaults.....102

Appendix

D

Watchdog Timer

NOTE:

The following discussion applies to DOS environment. IEI support is contacted or the IEI website visited for specific drivers for more sophisticated operating systems, e.g., Windows and Linux.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer:

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table D-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. While the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the Watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

NOTE:

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

Example program:

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:

        MOV     AX, 6F02H       ;setting the time-out value
        MOV     BX, 05          ;time-out value is 5 seconds
        INT      15H
 ;
; ADD THE APPLICATION PROGRAM HERE
;
        CMP      EXIT_AP, 1     ;is the application over?
        JNE      W_LOOP         ;No, restart the application

        MOV     AX, 6F02H       ;disable Watchdog Timer
        MOV     BX, 0           ;
        INT      15H
;
; EXIT ;
```

Appendix

E

Hazardous Materials Disclosure

E.1 Hazardous Material Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	x	O	O	O	O	x
Display	X	O	O	O	O	X
Printed Circuit Board	X	O	O	O	O	X
Metal Fasteners	X	O	O	O	O	O
Cable Assembly	X	O	O	O	O	X
Fan Assembly	X	O	O	O	O	X
Power Supply Assemblies	X	O	O	O	O	X
Battery	O	O	O	O	O	O

O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有"环境友好使用期限"的标签，此期限是估算这些物质"不会有泄漏或突变"的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	X	O	O	O	O	X
显示	X	O	O	O	O	X
印刷电路板	X	O	O	O	O	X
金属螺帽	X	O	O	O	O	O
电缆组装	X	O	O	O	O	X
风扇组装	X	O	O	O	O	X
电力供应组装	X	O	O	O	O	X
电池	O	O	O	O	O	O

O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。